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Railway Age

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EDITORIAL
Railway Age

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Mr. Ford's "Railroad Miracle"

THE credulousness of the American public regarding fairy tales about the railways is almost beyond belief. Recently somebody who knew more about miracles than about railroads began attributing to Henry Ford the working of a miracle in the management of the Detroit, Toledo & Ironton Railroad. Wide publicity was given to reports that he had taken a property which was moribund physically and bankrupt financially, waved his magician's wand over it, and within a few weeks, or a few months at the most, converted it into a fine property physically and a highly prosperous property financially. A large part of the public believed these reports. It apparently drew from them the inference not only that Mr. Ford was a genius, but that the managers of most of the railways were incompetents. If they were not incompetents, why did they not do with the other railways what he had done with the Detroit, Toledo & Ironton?

The *Railway Age* had its doubts as to whether even Mr. Ford could strike the stone of railroad operation and make floods of profits immediately burst forth. He has demonstrated in the manufacturing business that in certain ways he is one of the greatest geniuses of the age. His success in the automobile business has been such as to indicate that if there is any man in any other line of business in this country who could step into the railroad business and soon gain extraordinary results, it is Henry Ford. We were somewhat skeptical, however, as to whether it was possible within the short time he had owned the D. T. & I. for even Mr. Ford to work such a miracle as was attributed to him. Therefore, we have made our own investigation of the facts. We sent two of our editors to Detroit to call upon the men Mr. Ford has placed in direct charge of the management of his railroad and asked them what they have done and what results they have obtained. Be it said to their credit that Mr. Ford's representatives of the D. T. & I. were perfectly frank. They answered as well as possible every question asked them.

The results of the investigation made upon the ground and of a study of the official figures regarding the operations of the D. T. & I. are given in an article elsewhere in this issue. The facts show that under the Ford management the financial results of the Detroit, Toledo & Ironton have been very greatly improved. They also show that no miracle has been worked. The results obtained thus far have been due almost entirely to the circumstance that the ownership of the Detroit, Toledo & Ironton has been acquired by one of the largest manufacturers in the country, and that Mr. Ford has used his position as a very large shipper in the country to do things on the D. T. & I. which neither he nor anybody else could have done without being such a large shipper.

The Detroit, Toledo & Ironton now has much the same relationship to the Ford Motor Car Company that the Duluth & Iron Range, the Duluth Missabe & Northern and the Bessemer & Lake Erie have to the United States Steel Corporation. These steel corporation railways have been for many years among the most prosperous railways in America. They have been very well managed, but their prosperity has been largely due to the fact that they have been owned by an industrial concern which controls a vast amount of freight.

The facts about the Detroit, Toledo & Ironton may be summarized as follows: Mr. Ford bought it in August, 1920. He assumed complete control of its operation through men of his own choosing—most of them, men who were connected with his motor car business—in March, 1921, when he himself was elected president. During the four months, September to December, 1920, inclusive, after the present railway freight rates were fixed, the D. T. & I. handled an average of 49,246,000 ton-miles of revenue freight per month and had freight earnings averaging $493,800 a month. In the months of April, May and June, 1921, the road handled an average freight business of 37,093,000 ton-miles a month and earned from it an average of $694,203 a month. In other words, its average freight business in these three months was *almost 25 per cent less* than in the last four months of 1920, while its average monthly freight earnings were *over 40 per cent greater.* This large increase in freight earnings, in spite of a big decline in the total freight handled, could have been due to only one cause, and that was an increase in its average rate. And there was a very extraordinary increase in the average rate per ton per mile—a thing to which public attention never has been called before. In the last four months of 1920 its average rate was one cent per ton per mile. The average rate per ton per mile in April, May and June, 1921, was 1.88 cents, *88 per cent greater* than in September, October, November and December, 1920. The average rate of all the railways in the country is only 1.23 cents.

If no change whatever had occurred on the D. T. & I. except this enormous increase in its average rate per ton per mile its financial results would have been revolutionized. To what was this remarkable increase in the average rate per ton per mile due? Chiefly to two things: First, to a great change in the character of the traffic handled. Mr. Ford began giving his railway practically all of his freight business; and the freight handled directly and indirectly for his motor works consists largely of relatively high grade commodities which pay a rate much higher than the average. Meantime, the amount of coal handled by the railroad greatly decreased. Coal being a bulky and cheap commodity, it pays

a rate much smaller than the average. This change in the character of the traffic alone would have caused a large increase in the railway's average rate.

Secondly, the D. T. & I. has been able to use the large volume of traffic originated by the Ford interests to secure larger divisions of the through rates on all traffic hauled partly over its line and partly over other railways, and the great bulk of the D. T. & I.'s business consists of this through traffic. Both the change in the character of the traffic and the larger divisions of the through rates obtained by the D. T. & I. have tended to increase its average rate per ton per mile.

Furthermore, the management of the D. T. & I., in common with all the other railways, was able, partly because of the smaller traffic handled by it and partly owing to other causes, to make large reductions in its operating expenses. A study of these reductions in expenses indicate that in proportion to the reduction in traffic handled they were slightly greater on the D. T. & I., but only slightly greater, than those made on the railways in general.

The only really great change which had been made on the D. T. & I. up to July 1 was in the conditions which determined its average rate per ton per mile. But how about the reduction of 20 per cent in its local rates and the advance in the wages of its employees which have been so widely advertised? Neither of these went into effect until July 1 or later, and therefore neither of them had anything whatever to do with the increases in the railway's net earnings which have been so widely exploited. We shall have to get later data than are now available before anybody can say what is the effect of these changes in important policies.

It may be said, however, that Mr. Ford is so completely convinced of the desirability of a general reduction in rates that he has proposed that a reduction of 20 per cent be made in the rates of all railroads. It is not our purpose to impugn Mr. Ford's motives, but there are certain important facts about this proposed reduction in rates which are pertinent. The freight earnings of the Detroit, Toledo & Ironton are now running at the rate of approximately $8,000,000 a year. Therefore, other things remaining equal, a reduction of 20 per cent in them would reduce the road's earnings by about $1,600,000 a year. On the other hand, the freight bills paid by the Ford industries to all the railways amount to from at least $15,000,000 to $20,000,000 a year. Therefore, a reduction of 20 per cent in freight rates by all the railways would reduce the freight bills of the Ford Motor Company by $3,000,000 to $4,000,000 a year. In other words, Mr. Ford as a shipper would be sure to gain millions of dollars more by a reduction in rates than he could possibly lose as a railroad owner. Most of the other railways of the country are not intimately connected with large manufacturing concerns which would save millions of dollars annually by a reduction of their freight bills.

The *Railway Age* is glad Mr. Ford has entered the railroad business. We are glad to see him try the policies in which he believes on the Detroit, Toledo & Ironton. We wish he would buy a really large railroad system and try them on it. The Detroit, Toledo & Ironton is now practically nothing but a plant facility of the Ford Motor Works and the results obtained by it are no measure of what results would be obtained by the use of the same policies on a large railroad system. The changes in wages and changes in working conditions Mr. Ford has made on the Detroit, Toledo & Ironton have apparently completely broken the grip of the railroad labor unions on his railroad. We should especially like to see his policies tried on a large railroad system because we should like to see what results he would get in dealing with the labor unions on a large system.

Meantime, no man who is capable of studying the facts about the management and operation of a railroad and drawing rational conclusions from them will say that Mr. Ford has as yet worked a miracle on the Detroit, Toledo & Ironton. Furthermore, his own representatives on the railroad do not claim that he has. He has done little or nothing on it that could not have been done if the Detroit, Toledo & Ironton had acquired the ownership of the Ford Motor works and thereby acquired control of all the traffic of the motor works. The fact that so many newspapers and people have accepted without question stories to the effect that he has worked a "railroad miracle" merely illustrates their willingness to believe any story reflecting upon the efficiency of management of the railways in general which may be irresponsibly put into circulation.

Why Require Signatures to Train Orders?

The desirability of using train order Form 19 wherever possible, instead of the time-consuming Form 31, is a question that recurs frequently, and a letter on the subject, printed on another page, reminds us that it is an important one. This matter was quite fully set forth in the *Railway Age* several years ago* but the discussion did not seem to settle anything. What can be done? For one thing, the facts which go to make up the arguments for and against taking signatures ought to be more generally known; that is to say, ought to be distinctly stated and so clearly set forth that any superintendent or dispatcher could put the whole question before his own mind, easily and quickly; and could study and review the subject as fully and at as much leisure as he might deem desirable. Those dispatchers who have most strongly advocated Form 19 have dealt more with opinion than with facts; at least that is the impression that has been made. Operating officers who realize the need of saving the time of their trains but cannot induce their managements to abolish signatures would do well to form themselves into an investigating committee, *a la* Congress, and, having fully informed themselves by visiting prominent roads which have made the change, get out a convincing report for general circulation. An investigating committee would have the duty of reporting not only opinions, but all of the details of present practice, so far as such details could be learned. For example, a road that allows operators to sign conductors' names to orders is pretending to use a safeguard which in fact is not used. It is necessary to get rid of all false issues if a fair comparison of methods is to be made. Our correspondent makes out a strong case. Who can show the best practice with clearance cards and middle orders?

*Discussions of Train-Order Form 19 in the *Railway Age*, with names of writers:

1912	March 8	Page 418	J. P. Finan	A. T. & S. F.
	March 15	466	H. W. Forman	Western Pacific
	March 22	675	An Officer	N. Y., N. H. & H.
	April 5	788	T. Fay	Southern Pacific
	June 7	1235	Numerous dispatchers	
	July 26	150	Wm. Nichols	Southern Pacific
	Sept. 6	419	J. P. Finan	A., T. & S. F.
1917	June 22	1425	J. F. Mackie	Secretary, Disp'rs Ass'n
1918	Feb. 1	280	T. H. Meeks	Southern Pacific

Our Dwindling Exports

In July of this year 30 steam locomotives built in this country were exported for use on foreign railways; in the same month of last year 134 were exported. For the seven months ending July 31, our total exports of steam locomotives totaled 692, as compared with 1,025 for the same period of 1920. Similarly for freight cars: for the seven months ending the last of July, 5,579 had been sent abroad as compared with 13,708 for the same period of 1920. These figures indicate something more serious than a general business depression, because many foreign railways in spite of decreased traffic are still inadequately equipped and are in the market for equipment. The decrease in our exports reflects not only a less active foreign market but also the successful competition of foreign manufacturers for business which during and immediately following the war was diverted to this country. The exchange situation in most countries is against America and enables foreign competitors in many instances to underbid our manufacturers. Fortunately for America, however, we are in a better position to extend credit to foreign purchasers than almost any other country. The fact of the matter is, nevertheless, that our position in this regard is not taken full advantage of. With practically nothing having been done in the way of extension of the world's railway facilities during the past few years there exists abroad a vast potential market for railways supplies. Foreign manufacturers may underbid Americans in some cases where the prospective customer can give cash or short term notes in payment. Time, with the consequent rise in the value of foreign money, is the only remedy for this situation. If America fails, however, to compete successfully when long term credits, or permanent investments are involved, it will be because of lack of vision and skill in the machinery of finance rather than because of inadequate financial resources.

Quality vs. Quantity Shop Output

The reopening of several important railroad repair shops and the gradual building up of shop forces to normal at other points makes the present an opportune time to look into the future and impress upon shop organizations the importance of quality as against quantity output. Under the stress of heavy demands for power and car equipment at various times in the past, there is no question but that the quality of railroad repair shop work has been sacrificed in favor of maximum output. But a locomotive, for example, requires something more than a coat of paint in order to operate efficiently and safely. A defective car sill or draft gear cannot be covered up forever. It is a serious question if, even under the most pressing demands for locomotives and cars, it pays to slight repair work in any important detail. It costs almost as much to do an inferior job which will subsequently give trouble as it would to take a little more time and do the job right in the first place. In addition, there is serious danger of accidents resulting from inferior workmanship and the practical certainty of locomotive failures and costly train delays. If, as is often the case, a locomotive or car has to be returned to the roundhouse or back shop and have repair work done over, the total cost is many times greater than the initial cost of doing the work right. Too much emphasis cannot be placed on the need for painstaking, careful repair and maintenance work in all shop departments. It is surprising how fast the idea will propagate itself among shop men that a railroad wants output and does not care so much for quality. The higher mechanical department officers should make extremely plain to their subordinates and through them to the shop employees the false economy of turning out any but the best work.

Are Creosoted Bridges Good Fire Risks?

On May 27, as told elsewhere in this issue, hot coals from a passing locomotive set fire to a timber trestle on a southern railroad. Under the influence of a high wind the flames were spread over the entire structure, and the fire burned fiercely for some time, then died out practically of its own accord. Yet the bridge, far from being destroyed, experienced scarcely more than a thorough scorching. This is an unusual incident when it is recalled that timber trestles, once set fire, have seldom escaped destruction. But more than this, it would seem that the circumstance has about it a significance meriting the close attention of the engineer. It is a well-known fact that, as mentioned in the article in question, much opposition is manifested in some quarters to the use of creosoted timber in railway trestles, largely in the belief that creosoted timber offers very little resistance to fire. But here it seems is a case of a timber trestle which survived a destructive fire for the very reason that its timber was saturated with creosote. This conclusion may or may not meet with the agreement of those who look unfavorably upon the creosoted timber trestles, nor will it necessarily alter the practice in bridge construction. It has, however, operated at least to confirm the favorable opinion of creosoted trestles held by the road upon which the fire, the first in ten years, occurred; in any event it bears evidence to the fact that the question—are creosoted bridges good fire risks?—is anything but a dead issue.

Loss and Damage as a Factor in Transportation Costs

POST-WAR READJUSTMENT has required every manufacturer to place his house in order. Production costs have been investigated with the result that unprofitable lines have been dropped or manufacturing processes have been studied with a view to eliminating waste. As manufacturers of transportation, the railways can well study their operations to make sure that all costs incidental to the handling of the various classes of traffic are taken into account. Although the railroads are not in the fortunate position of the manufacturer, who can cease operation with respect to any product that is found unprofitable, they can at least endeavor to obtain a readjustment of rates with respect to the particular classes of traffic that are being handled at a serious loss.

As the money spent in satisfying claims for loss and damage must justly be considered as a part of the cost of transportation, it would be well to consider the relation between claims arising from the handling of a particular class of traffic to the revenue derived therefrom. As a case in point, an l. c. l. shipment of silk that brought the railroad a gross revenue of $1.58 was destroyed in transport, giving rise to a claim for $21,000. A simple operation in division demonstrates that this railroad would have to handle 13,000 similar shipments without loss or damage in order to make up the outlay for the damage claim in this single case without taking into consideration any of the other expenses which must be allocated to the service performed.

If this were a matter which concerned only the transportation of silks and a few other exceptionally high priced commodities, the situation would not be so serious, but unfortunately it concerns the entire l.c.l. traffic. In 1920 the losses incurred by the railroads as a result of loss and damage to l.c.l. freight, including claims, cost of claims investigation, and adjustment amounted to approximately $52,300,000, while the total revenue derived from l.c.l freight on the basis of 10 per cent of the total freight revenue was about $431,000,000. This means that 12 per cent of the entire revenue derived from l.c.l. traffic was expended in satisfying claims for loss and damage to this class of traffic alone.

This is in sharp contrast to the situation with respect to

carload freight wherein the loss and damage amounted to about $62,000,000 in comparison with a total freight revenue of $3,880,000,000. In other words, the expenditure for freight claims in the case of carload freight was only 1.6 per cent of the gross revenue.

The problem of loss and damage is not new, although the record of 1919 and 1920 has imposed a problem on the railroads by comparison with which all previous experiences pale to insignificance. The comparison given above, which demonstrates the relationship between freight claims and freight revenues, is not made so much with the idea of suggesting changes in rates which would compensate for the losses as to call attention to the need of concentrating efforts to reduce losses on those items for which they have been the greatest. As another factor to be considered in this regard, it is of special interest to note that practically 70 per cent of total claims arising from l.c.l. traffic are chargeable to shortages, i. e., a moral rather than a physical hazard. The subject is one well worthy of further analysis and attention and into which the question of adequate police surveillance must enter quite largely. These conditions and others which are being developed by the Freight Claim Division of the American Railway Association will be fruitful in indicating those measures that will be most effective in reducing loss and damage.

Michigan Central

THE MICHIGAN CENTRAL'S location in the busy automobile manufacturing district of southern Michigan enabled that carrier to prove a good money-maker for the government during the period of federal control. The standard return for the road was set originally at $8,052,127. In 1918 it earned a net railway operating income of $13,606,480, approximately 50 per cent over the standard return. In 1919 it earned $16,934,173, double the government rental. In January and February, 1920, the last two months of federal control, it approximated the standard return. This rate of earnings, however, was not continued for long during the remainder of the year. Increased wages, a heavy increase in the cost of fuel and similar increases in cost such as characterized the year 1920, prevented the road from realizing on a heavy traffic, considerably in excess of that carried in 1919. The net railway operating income for 1920, as given in the December, 1920, monthly report to the Interstate Commerce Commission was only $4,668,280. It happened, however, that this falling off in earnings was compensated for by the guaranty for the months March to August. The net return to the corporation was in excess of that for 1919, as we shall see below.

The Michigan Central at the present time seems to have succeeded to a considerable degree in restoring its earning power—or, in other words, in overcoming the disadvantages with which it was confronted during 1920. At present it is carrying only about two-thirds or three-quarters as much traffic as it was carrying at this time last year. Its net, however, is showing a progressive increase month by month. In June, 1921, the net railway operating income was $1,459,699, as compared with a deficit in June last year of $793,062. For the first six months this year its net was $4,809,464, or more than half the average annual earnings for the period July 1, 1914, to June 30, 1917, on which the standard return was based. The net for the first six months of 1920 was only $1,000,186. A showing of this kind evidenced in June and the first six months of the present year—a period of comparative industrial inactivity—may be taken as a good indication of the Michigan Central's earning power and of what may be expected when business is again revived.

The Michigan Central total freight revenues in 1920 were $55,215,123, an increase of $3,561,213 over 1919. The total operating revenues were $87,790,799, an increase over 1919 of $8,946,414. As against this increase in operating revenues, there was an increase in operating expenses, 1920 over 1919, of $15,528,435. The total operating expenses were $77,370,249. The net operating revenues of $10,420,551 compared with $21,002,572, a decrease of $10,582,021 from 1919. This decrease in net with an increase in gross is hardly sufficiently exceptional from the experience of most roads during 1920 to need extended comment.

The tons of revenue freight carried in 1920 were 30,203,776, as compared with 26,578,110 tons in 1919. The largest single factor in this increased business was the increased tonnage of bituminous coal. In 1920 the road moved 181,331 carloads of that commodity and a tonnage of 8,174,625, an increase of 3,712,675 tons over 1919. The Michigan Central also carries a large tonnage of anthracite coal—in 1920, 1,352,354 tons—a large part of which it receives from the anthracite roads reaching the Buffalo district. The total revenue ton-miles of all freight carried in 1920 was 4,824,739,972, the average haul being 160 miles; in 1919, the revenue ton-mileage was 4,718,763,911, the average haul, 178 miles. The Michigan Central has a comparatively high traffic density, the tons of revenue freight carried one mile per mile of road in 1920, being 2,637,363. Another of the distinguishing features of the road's operations is its heavy train load. In 1920, the average revenue train load was 761 tons as compared with 736 tons in 1919.

In the editorial review of the annual report of the New York Central which appeared in these columns a few weeks ago considerable attention was paid to the large amount of new equipment which had been acquired by that road and by the New York Central system as a whole in recent years. The point was made that the New York Central being one of the main arteries to the port of New York had been obliged to expend large sums for new equipment and facilities to keep up with the constantly expanding demands upon it for transportation. The same has been true on a smaller scale of the Michigan Central. That road received from the government 30 of the U. S. R. A. standard locomotives and 2,000 cars. The company is also to receive, or already has received, from the New York Central, 26 locomotives, 38 passenger train cars and 1,950 freight cars, covered by the New York Central's equipment trust of 1920. The estimated cost of this equipment is $9,356,839. The Michigan Central receives it under a sub-leasing arrangement and as sub-lessee is to assume its pro-rata share of the equipment trust certificates, principal and interest, etc., and at the fulfillment of the trust is to become the owner. The amount of the trust was 75 per cent of the total cost, the other 25 per cent being obtained from the New York Central as a loan, covered by fifteen 6 per cent notes maturing from 1921 to 1935.

The Michigan Central also secured from the New York Central in a similar manner $613,000 for additions and betterments to way and structures. The result of all this financing was an increase in the funded debt of the Michigan Central from $57,793,931 on December 31, 1919, to $72,501,446 at the end of 1920. The interesting manner in which the New York Central secured funds from the revolving fund administered by the Interstate Commerce Commission and then loaned in part to the various subsidiary companies—as here briefly outlined in the case of the Michigan Central—is further detailed in the editorial review of the New York Central heretofore referred to.

Referring now to the corporate income account of the Michigan Central, it will be noted that the total income from railway operations in 1920 was $10,508,670, including compensation for January and February of $1,342,021, additional compensation for completed additions and betterments of $91,063; guaranty for the guaranty period of $4,162,855 and net railway operating income for the last four months of the year of $4,912,730. The total of $10,508,670 com-

pared with the standard return for 1919 of $8,699,813, an increase of $1,808,857. The net corporate income for the year 1920 was $3,805,785; for 1919, but $67,230. The regular four per cent dividends were paid leaving a surplus for the year of $3,056,329. The surplus for 1919 was $67,230, the dividends for that year being paid out of surplus.

The operating results for 1920, as compared with 1919 are as follows:

	1920	1919
Mileage operated	1,866	1,862
Freight revenue	$55,215,123	$51,653,910
Passenger revenue	23,557,853	20,070,337
Total operating revenue	87,790,799	78,844,386
Maintenance of way expenses	12,614,090	9,627,843
Maintenance of equipment	22,150,404	15,682,093
Traffic expenses	1,074,701	788,066
Transportation expenses	38,521,215	29,506,855
General expenses	1,737,874	1,459,291
Total operating expenses	77,370,249	57,978,857
Railway tax accruals	4,642,111	2,650,000

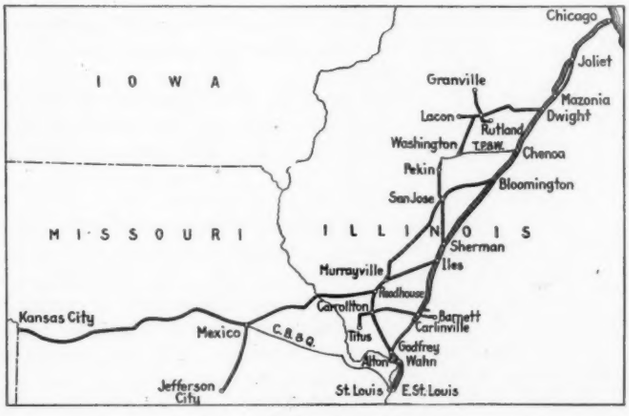
The corporate income account follows:

	1920	1919
Compensation, January and February, 1920; full year 1919	$1,342,021	$8,052,127
Additional compensation account, completed additions and betterments	91,063	647,685
U. S. Government guaranty, March 1 to August 31	4,162,855	.....
Net railway operating income, September 1 to December 31	4,912,730	.....
Total (compared with compensation accrued in 1919)	10,508,670	8,699,813
Total other income	1,129,833	858,187
Gross income	11,695,993	9,558,000
Total deductions from gross income	7,836,499	7,062,567
Net corporate income	3,805,785	67,230
Dividends declared (4 per cent each year)	749,456	*
Surplus for the year	3,056,329	67,230

*Dividends in 1919, aggregating 4 per cent charged to accumulated surplus.

Chicago & Alton

THE CHICAGO & ALTON operates 1,050 miles of road including a line double tracked for almost its entire length between Chicago and St. Louis and a single track line from a point north of St. Louis to Kansas City. The road is thus able to offer direct service between Chicago and St. Louis and Chicago and Kansas City. The route from St. Louis to Kansas City is somewhat roundabout, but is shortened considerably for passenger traffic by a joint service with the



The Chicago & Alton

Chicago, Burlington & Quincy using the tracks of the latter company from Mexico, Mo., to St. Louis.

The greater part of the Alton's main line mileage is laid with 90-lb. rail. Of the remainder there is a considerable mileage laid with 80-lb. rail and some 56 miles of 100-lb. which is being used for renewals. Rock ballast is used for most of the main line roadbed. Of the total tonnage carried in 1920, 53.19 per cent was made up of products of mines. Bituminous coal, received principally from mines in central Illinois, made up 5,258,883 of a total revenue tonnage of 12,070,934.

The Alton is naturally well situated from a point of view of passenger traffic and an efficient traffic department and loyal service on the part of employees have done much to aid it in maintaining its position in spite of adverse conditions, the greatest of which doubtless is an inadequate supply of modern all-steel equipment. The company provides good service between Chicago and St. Louis and also between Kansas City and St. Louis jointly with the Chicago, Burlington & Quincy over the latter's cut-off from Mexico, Mo., to St. Louis. Competition with other shorter and better equipped lines has prevented the same development of the Chicago-Kansas City business, although even on this line the traffic is fairly heavy.

The Chicago & Alton has been rather adversely affected by the recent tendencies in railway operations and earnings. It had a standard return for operations during federal control of $3,178,315. In 1918 it had a net railway operating income of $1,776,749, or $1,400,000 less than the government rental. In 1919, due to a sharp falling off in traffic and to the increased costs of operation in that year, operations resulted in a net deficit for the year of $299,224; in 1920 there was a net deficit of $278,319.

The busiest year in the Alton's history was 1917. In that year it carried 12,262,489 tons of revenue freight. In 1918 it carried 11,795,507 tons; in 1919, 10,312,152 tons and in 1920, 12,070,934 tons. The revenue ton-miles in 1920 were 2,252,431,641, and the average haul 187 miles. Considering the percentage of coal carried, the Alton does not secure a heavy train load, although it has been making considerable progress along these lines in the past few years. The revenue train load in 1920 was 539; this compared with 525 tons in 1919 and with 524 tons in 1916. In 1918, however, the figure was 515 tons.

The Alton, because of the very nature of the conditions with which it is confronted, has not been making marked progress in getting on its feet financially. Its corporate income account in 1920—that is, including the standard return for January and February and the guaranty for the guaranty period—showed a deficit for the year's operations of $634,647. In 1919 the property had a deficit of $997,469; in 1918, $1,429,319. The income account for 1918, however, included an item of $782,240, representing expenses prior to January 1, 1918. The operating results in 1920 as compared with 1919 are as follows:

	1920	1919
Mileage operated	1,051	1,051
Freight revenue	$20,818,536	$17,330,784
Passenger revenue	6,950,981	6,404,081
Total operating revenue	30,374,934	25,272,334
Maintenance of way expenses	4,582,276	4,287,871
Maintenance of equipment	8,655,184	7,359,875
Traffic expenses	485,296	292,379
Transportation expenses	14,068,980	10,903,752
General expenses	779,513	645,801
Total operating expenses	28,677,222	23,617,902
Net revenue from operation	1,697,712	1,654,432
Taxes	786,503	743,654
Operating income	909,483	908,184
Net railway operating income	Def. 278,319	Def. 299,224

The corporate income account is as follows:

	1920	1919
Rental from U. S. Railroad Administration	$529,719	$3,178,315
U. S. Government guaranty period claim	3,105,524	.....
Total income from railroad properties	4,412,748	3,101,409
Net income from railroad properties	3,355,860	2,830,356
Total income from all sources	3,475,116	2,936,181
Deduct—Interest on funded debt, etc.	4,109,763	3,933,650
Net deficit	634,647	997,469

ROCH LANCTOT, a prominent French-Canadian member of the Canadian Parliament, in a recent speech at St. Edouard de Napierville, Quebec, declared that the Government of Canada would be wise to rid itself as soon as possible of the publicly owned railways. "What is the use of adding to an investment that produces nothing but deficits?" asked Mr. Lanctot. "I would prefer to sell the whole thing to the Canadian Pacific for a dollar. The government is not capable of running railways on a business basis; there is too much temptation."

Letters to the Editor

A Substitute for the Derail

LONDON, Eng.

TO THE EDITOR:

In the *Railway Age* of July 16 appeared an article by A. H. Rudd, chief signal engineer, of the Pennsylvania System on "The Elimination of Derails." Mr. Rudd is a recognized authority on signaling matters and no doubt anything he may write will always be given serious attention; I feel that he is absolutely right as to the derail. It is a source of great danger and is directly responsible for great economical loss in railway work, being a costly item to install and maintain, and, at best, it is a menace to safety. It is a relic of bygone days when the only means of stopping a train passing a signal at danger was to throw it from the track. Very true, the train passing the signal at stop was penalized, but at what a cost; not only in damage to the equipment, but also many times to the passengers who were not in any way responsible.

The question that naturally arises after reading Mr. Rudd's article is: What is the remedy? If we eliminate the derail, what shall we substitute? The answer naturally is automatic train control, to prevent a train running past a stop signal. It is quite evident that before a train can stop it must be slowed down, and considering this fact it is quite obvious that the substitute for the derail is a scheme of automatic train control that includes speed control; a system that will impose speed restriction when approaching a stop signal and a stop at a stop signal without a dangerous overrun; a scheme that will control a train in accordance with signal indications and act to prevent accidents, but functioning only when the engineman fails. When the railroads are equipped with a train control of this character, there will be no need for derails at interlocking plants and trains will stop at stop signals without danger of destruction.

The only objection to Mr. Rudd's article is that evidently one paragraph is missing. Perhaps it is the last one, and, like the shortest verse in the Bible, it may be brief but most eloquent: automatic train control.

J. BEAUMONT.

Stop-and-Proceed Rule Defended

BOSTON, Mass.

TO THE EDITOR:

A. H. Rudd's article in the *Railway Age* of August 6, commences with an excellent abstract defining the purposes which a modern railway signaling system should be made to serve. The main discussion, however, consists of an emphatic denunciation of the stop and proceed rule.

Analysis of some of the points made by the author raises a number of interesting issues which are not readily disposed of, and in several instances it is quite difficult to trace how the facts lead to the conclusions reached. Let us consider Mr. Rudd's contention with the case which is at once simplest and most typical, viz., a double-track line equipped with upper-quadrant three-position automatic block signals.

The author says: "Some of us believe . . . the stop and proceed signals should be eliminated; and stop signals displayed *only where stops are required,*" describing this condition as follows: "i.e., when protection is needed against opposing movements, and at grade crossings, junctions and crossovers where side collisions might otherwise occur."

What is the proper point to stop a train which has entered a block occupied by a preceding unit? Safety demands that a sufficient interval be preserved at all times between trains, and it is generally understood that signals are located with due regard for the efficient performance of this function. It indeed seems incredible that the author intended to exclude the stop signal from the situation that I mention. Surely he does not mean that the only stop signal should be those auxiliary or reserve instruments, torpedoes, flags, and the like.

"Let us tell the engineman to stop only where necessary and when we say stop let us mean it. Less variations in stops and all real stops. *Stop-and-Stay;* this because it is *necessary.*"

Now both the "real" stop and the stop-and-proceed indication have been barred from our case. Accordingly our three-position signal must become a two-position indicator (proceed slowly prepared to stop short of train or obstruction, or clear), affording less information than it did formerly. And Mr. Rudd has explicitly advocated supplying the engineman with as much knowledge as possible concerning the track ahead

But suppose that only the stop and proceed rule is eliminated, and we substitute a "stop-and-stay" indication. What is the result? *Hold* trains where they had paused. And yet we are given to understand in definite terms that the stop and proceed rule works against the expediting of traffic.

Continuing, the article points out that the reason for the *stop* in the regulation criticized, is "because it is presupposed that without it, the second requirement (proceed at slow speed prepared to stop short of train or obstruction) may be disregarded." It is my belief, however, that there are other important factors effective. The stop and proceed rule is superior to the proceed at slow speed indication, for:

1. *It makes unmistakable* the requirement that the engineman bring his train under control. There is a fundamental difference between making a stop and reducing speed. The first is a fact incapable of modification; slackening of speed to an estimated rate per hour is an act in which judgment is an important element, and it is well known to what extent judgment varies with individuals.

2. *It compels* the attention of the train crew to an irregularity in the running of the train.

Furthermore a desirable feature of the stop-and-proceed rule is that it automatically tends to space trains as nearly as is consistent with safety. It is to be questioned if the time consumed by the stop could generally be advantageously utilized. For without the stop the train would commonly close up too quickly upon the preceding unit and would summarily be required to halt.

We have now reduced the issue to the question of what is ordinarily the more desirable place for the stop, at block limits or anywhere within the block. The answer seems unmistakable.

Possibly shortening the length of blocks may sometimes be a better means of accomplishing what Mr. Rudd and every other progressive transportation man is seeking, than would abolition of the stop and proceed rule. The advisability of contracting blocks, however, is dependent upon a variety of factors, and often the presence of special operating conditions is decisive. Moreover, expense of re-installation is not always an incidental consideration.

To my mind the stop and proceed rule is at present the method par excellence of keeping trains moving with a maximum of safety where dense traffic conditions prevail. The three indications now in general use I believe satisfy all the requirements which Mr. Rudd sets forth. In brief, the 45-degree indication keeps a train moving when it is safe, the 90-degree indication stops a train when a stop is necessary. It is the *stay* that is useless. Perhaps I may suggest that it would be interesting to know of a collision in which the stop and proceed rule has been at fault.

Given additional precautions, I will not deny that the proceed at slow speed direction as Mr. Rudd would use it, is worthy of experiment. For example, let the engineman approaching a block which is occupied, reduce speed to a

prescribed rate, at the same time whistling for the attention of the conductor, or preferably a regularly appointed brakeman, of his train: Responsibility might be divided between the engineman and the brakeman for the conduct of the train according to special regulations, from the time of passing the entrance of the occupied block until the passing of the first clear signal. Trainmen would be enjoined to respond to engineman's call, with notice to proceed into occupied block only when satisfied that necessary speed reduction had been effected. Also instructions might provide that such brakemen remain upon car platform ready to communicate at once with engineman if the required caution were not being exercised. A further check would be produced if brakeman noted on a special form the time of passing entrance and end of block, noting whether or not block was found occupied.

Doubtless there are logical objections to such an innovation. Particularly radical would be the responsibility accorded the brakeman. Paramount in importance, however, is the insistence that understanding of signals shall be complete. Not only do those in the engine know what is taking place; they know that the train crew in the rear is bound to watch for any exception in the running of the train.

Assurance of proper signal indication observance increases with the number of observers.

But admittedly this plan is rather clumsy. Nevertheless I do think that these principles, of exchanging understandings, and of giving a larger place to the interest of the crew in the operation of the train, offer profitable material for discussion.

In conclusion let us remark that the stop-then-proceed rule has stood the test of years' experience. Let it stand—stop and think (they go together) then proceed—a good rule always.

C. RADFORD SANDS.

Signatures to Train Orders

CLEVELAND, Ohio.

TO THE EDITOR:

"Signals keep trains moving." This familiar maxim of one of your advertisers is endorsed by everybody. But there are many roads which have not as many signals as they would like, and so they continue to keep trains moving, as best they can, by dispatchers' orders. The dispatcher's office, however, has many handicaps, which it is desirable to do away with, and the problem how to accomplish that important end continues to agitate progressive minds.

The stopping of trains, especially long and heavy freights and heavy and fast passenger expresses, for the single purpose of receiving train orders is a serious element of cost in the operation of a busy railroad; and the use of train order Form No. 31, with which stops are necessary because of the requirement that the conductor shall sign the order before it can be completed, is subject to increasing criticism. A few roads have for a number of years made almost exclusive use of Form 19, requiring no signature, and have thus greatly reduced the number of train stops, promoting celerity and regularity in the movement of trains, and thereby reducing expenses; while at the same time, a satisfactory degree of safety has been maintained. The practice of these few roads has been commended and academically approved, and the advantages of the exclusive use of Form 19 have been discussed in considerable detail; and yet general practice is not much changed. Conservative railroad officers stick to Form 31—either because they believe that signatures are essential to safety or that the saving in delays is not of much value—and so the advocates of the non-signature form continue to address their arguments to deaf ears. Cannot something be done?

The main points of the argument against Form 31 are pretty clear; but, as already suggested, not a great many dispatchers (or higher officers either) have got them well fixed in their minds. One fact needing to be emphasized is that the delays necessitated by getting signatures are growing worse, year by year, as very long trains are becoming more common. For a freight train of 85 cars it is impossible to take signatures and make delivery in less than 20 minutes, because the conductor, or someone, must walk the length of the train, either from the caboose to the engine or from the engine to the caboose.

The presence of the conductor in the telegraph office is to be regarded as at least a potential safeguard; and in giving up such safeguard, however small it may seem, the careful officer naturally seeks to assure himself that all other possible safeguards are kept in full force. There are two well-known safeguards which are not yet well enough appreciated: (1) the clearance card, to be given to the conductor in every case, bearing the numbers of all of the orders which he is required to receive at that point; and (2), the "middle order"; the placing of meeting orders at the station at which the trains are ordered to meet each other.

If we rigidly enforce the rule requiring clearance cards, every conductor will be constantly trained in habits of carefulness; and by having the cards numbered by the dispatcher, in the same way that he numbers train orders, lazy operators can be prevented from issuing cards carelessly and then claiming, untruthfully, that the dispatcher's approval had been given.

The middle order is universally approved—"if practicable." Why can we not require it invariably? If eastbound train No. 2 and westbound train No. 1 are to meet at *B*, the placing of the order at *A* for No. 2, at *C* for No. 1, and at *B* with the operator, makes a combination of safety which many dispatchers regard as almost absolute. This assumes, of course, that the train-order signal at *B* is so located as to stop the superior train before its locomotive reaches the switch where the inferior train enters the side track.

These two safeguards are well spoken of by all who have used them; and the success of any propaganda for the more general use of Form 19 would seem to depend on a vigorous campaign for their adoption. To advocate the relaxation of the signature rule only on lines having automatic block signals can hardly be expected to lead to any real advance in practice. To insist on the complete abolition of signatures is also a waste of time, for every dispatcher has cases occasionally where he must work at long range—as when sending an order to a train which is remote from the telegraph or telephone station—and cannot do less than get an acknowledgment in writing. This can be done, however, with Form 19. There is no need of two forms.

DISPATCHER.

Revive the M. M. and M. C. B. Associations

TO THE EDITOR:

In the *Railway Age* of August 20, we read that the Association of Railway Executives has decided that "in view of the imperative need for the exercise of all possible economy, annual or special meetings or conventions of all organizations under the supervision of this body should be indefinitely postponed or curtailed in every possible way." The officers of the Mechanical Division of the A. R. A. evidently decided that a convention would not save the roads what it cost and therefore cancelled it. Now the question arises why not make this decision permanent and abolish the conventions indefinitely?

It has always been my understanding that the meetings

of the Master Mechanics' and Master Car Builders' Associations and their so-called successors, Section III or Division V, were held because the men who attended got enough ideas and inspiration to make the meetings a good business proposition for the roads. The Master Mechanics' and Master Car Builders' conventions were certainly worth while, largely because the members were free to act and were interested in the associations and were able to do big things by free and concerted action. The present organization apparently has become a mere rubber stamp for the higher executives and the members have lost interest in it.

At the time Section III, Mechanical, was formed and affiliated with the American Railway Association it was hoped that it would open a wider field of usefulness and enlarge the work instead of curtailing it. It seems, however, that the merger of the old mechanical associations was one of the big mistakes of federal control. That being the case, why should it be perpetuated? The value of the old associations was generally recognized. Their names meant a great deal to the membership who were strongly opposed to having the associations lose their identity. It is generally believed that one man who had conceived an antipathy for one of the organizations used the Railroad Administration as a tool to kill that association. It is generally understood that the Master Car Builders' Association was forced into the merger and never legally became a party to it because the unanimous vote required for such action was not secured until two officers had resigned.

The two grand old associations now have their identity hidden behind a meaningless number. Interest is waning and the work of the committees seems to lack almost entirely the forward looking, constructive viewpoint that marked the work a few years ago. It is pertinent to inquire whether the present organization has justified its existence. I believe those who have followed the earlier work of the mechanical association will answer in the negative.

Fortunately, the spirit of the Master Mechanics' and Master Car Builders' Associations is still alive. The only way to get results seems to be to revive the old associations. There is no reason why they could not make a working arrangement with the American Railway Association just as the American Railway Engineering Association now co-operates with that body, yet still retains its identity. The old associations would be assured of the loyal support of the former members and with a generous influx of new blood, which the present association has not had since it was formed, they would be in a position to get down to business and tackle the big problems confronting the mechanical department that are so often referred to in your columns, but which Division V, Mechanical has not yet waked up to. Let's show the railroad world that the mechanical department is not made up of a lot of dead ones. Let's have a regular convention on the pier next year, with the electric sign flashing as it did in the old days, "Welcome M. M. and M. C. B."

MECHANICAL ENGINEER.

Value of College Men to Railroads

BOSTON, Mass.

TO THE EDITOR:

I have read the letter in the *Railway Age* of August 20, 1921, page 323, by Vice-President Ennes of the Wheeling & Lake Erie, on "Is the College Graduate Properly Equipped for Railroad Work?" From the viewpoint of the college man it appears that the article, while it in general shows more generosity toward college men than they have come to expect from the railroads, admits a lack of progressiveness, on the part of the railroad, which has been shown on the part of other industries and suggests a possible weakness in railroad organization.

Whether or not the college can amend its curriculum in such a way as to turn out a finished transportation product is questionable. That it can teach the fundamental elements of railroading, including transportation, the ultimate object of all railroading, as medicine, law, engineering and the other professions are taught, there is no reasonable doubt. It is a long step from the college campus to the position of a successful physician or surgeon, an eminent lawyer or a competent practising engineer. Why then should the railroads look to the college for a made-to-order transportation or operating man? Moreover, if it is possible that such a ready-made product could be provided by the college, would it not necessarily be at the expense of curtailment of other fundamental knowledge, which, though not an absolute essential to successful transportation as such, would make for well rounded railroad organization and economic proficiency? Should not the railroads, as other corporations have very largely come to do, place some value on a fundamental knowledge of the component parts of its plant; and by definite policy mold the possessors of such knowledge to the ultimate benefit of the entire plant rather than remain so rigidly devoted to departmental caste?

That, under the present railroad attitude, the young college man, after a total of eight years of school and service, would not ordinarily be as well equipped for the service of transportation as would the young man who, on finishing high school, had entered railroad service as a fireman, brakeman, yard clerk, telegraph operator or kindred occupation, is without doubt very true. But is not this condition to the discredit as well as disadvantage of the railroads rather than an indictment against the college man or the college which trains him? It would seem reasonable to believe that a man having intimate knowledge, both by education and experience, of the requirements and underlying technical and business principles making possible the plant which produces the transportation, would develop into as competent a transportation man as would the one who has no fundamental knowledge of the plant which he operates.

Net revenue is the ultimate object of all railroading. Transportation is the product which produces revenue. To furnish transportation in such a way as to produce *net* revenue is the greatest problem at the present time. Could this not be done more readily by the man, college or self-educated, who is not merely a transportation man, but is a railroad man whose right hand knows what his left hand is doing? That the colleges would gladly do their part in furnishing the raw material for such a railroad man, if the railroads would adopt a definite policy for passing him through the school of experience, and thereby create a demand, is a foregone economic conclusion.

I am still of the opinion that the railroads want college men and that when that desire is felt, with sufficient force, by those officials who direct corporation policies to stir them to co-operation with the colleges, and to recognition of the worth of the college training supplemented by a definitely outlined opportunity for practical training, there will be little complaint "that the college man does not come up to expectations in most cases."

F. E. HANSON.

"CHILD HEALTH SPECIAL" is the name of a train that is touring Canada. It is managed by the Child Welfare Association of Montreal and has received the endorsement of the Provincial Red Cross, McGill University and other organizations. It consists of two coaches, equipped with a child welfare exhibit, consisting of posters, panels and various displays. Parents with babies, and children up to 14 years of age, are invited to attend and to have their children examined, weighed and measured by the professional staff aboard, consisting of physicians, nurses and a social worker.

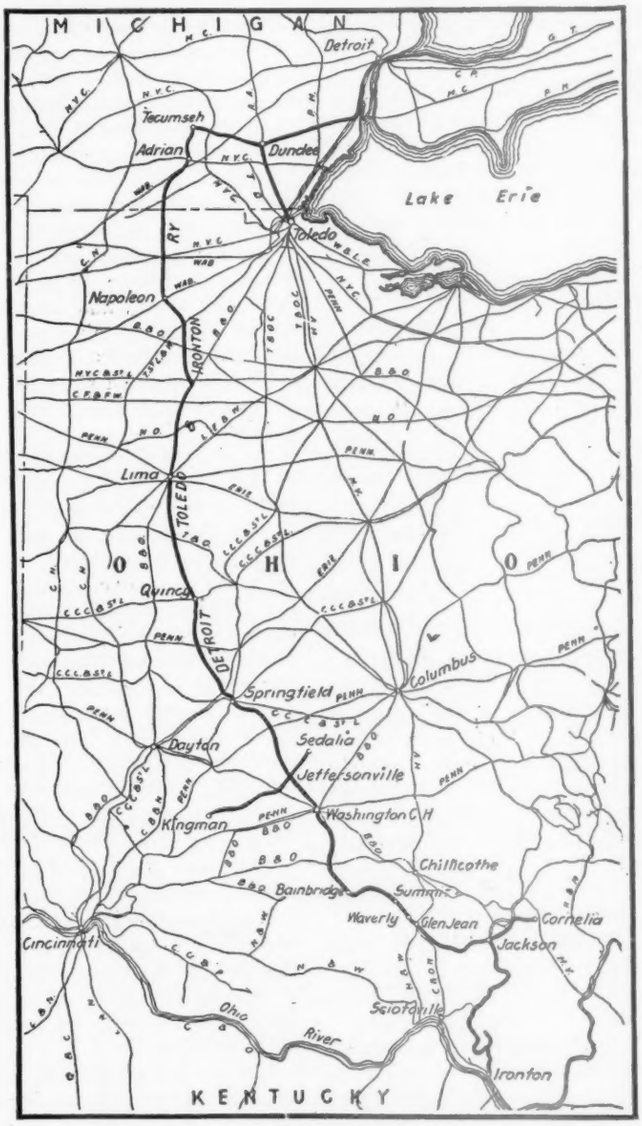
What Has Henry Ford Done With the D., T. & I.?

Freight Revenues Have Been Increased About 40 Per Cent, with Less Revenue Traffic Movement

HENRY FORD'S entrance into the field of steam railway transportation, through his acquisition of the Detroit, Toledo & Ironton, has aroused a more intense public interest than any other single recent event in railroad history, not excepting the advent of federal control at the beginning of 1918. His success as a manufacturer in a field in which, through great ability and highly standardized factory methods, he has built up a vast business, has given him an international reputation such that his opinions on any industrial subject are received with great respect by the public.

Mr. Ford has purchased a railroad which never before had demonstrated that its existence as a common carrier was economically justified. He raised the wages of his railway employees when other roads were adopting reduced wage scales. He has made a 20 per cent reduction in local freight rates and has started a general rate reduction.

In February, 1921, the D. T. & I. produced an operating deficit of $104,923. Mr. Ford became president on March 4. In April the road produced a net operating revenue of $301,675, which has increased steadily for the succeeding three months. Hence, when Mr. Ford was asked, "What is the first thing you would do if you were given all the railroads to run?", and he is said to have replied, "Slash rates, boost wages, let a lot of men go," the connection between cause and effect seems to be established and it is not unnatural that Mr. Ford is credited with having worked a miracle in the transportation world.



The Detroit, Toledo & Ironton and Its Connections

But a chronological statement of the facts does not justify belief in so simple a relationship between cause and effect. The most talked of Ford policies such as the new wage scale based on a minimum of $6 a day, the eight-hour day and six-day week in train service and the abolition of off-line traffic agencies, did not become effective until July 1, 1921, and the reduced freight rates became effective still later. The latest published returns for revenues and expenses are for the month of June, 1921. It is evident, therefore, that these policies have not been a direct factor in the results on which public opinion has been formed.

These policies and the favorable operating results have been made public by the daily press at the same time, giving the erroneous impression of cause and effect.

It is not the purpose of this article to speculate on the effect likely to be produced by these policies. Time will make available the facts from which their wisdom may be judged with assurance. With the facts already available, however, it is possible to determine the principal causes for the spectacular improvement in operating results which has so closely followed the assumption of complete control of the railroad by Mr. Ford.

How Revenues Have Been Increased

From September to December, 1920, inclusive, the Detroit, Toledo & Ironton handled an average of 49,246,000 net ton-miles of revenue freight per month. During this period the freight revenues averaged about $493,800 a month, giving an average revenue of one cent per revenue ton-mile. During January and February there was a marked falling off in the volume of traffic; the net ton-miles for the latter month scarcely exceeded ten million. In March, following Mr. Ford's accession to the presidency of the road, the traffic movement showed a marked improvement in the face of a pronounced depression on other roads. This increase continued through the months of April and May with a slight falling off in June, which is the latest month for which operating statistics are available. The volume for May, however, is 16.5 per cent below the average for the last four months of 1920.

In April the traffic movement amounted to 31,600,000 revenue ton-miles and freight revenues were $674,692. The May movement amounted to 41,090,000 revenue ton-miles and the freight revenues for the month were $721,562. In June revenue ton-miles dropped to 38,589,000 with a freight revenue for the month of $686,355.

It is evident, therefore, that instead of the one cent per

ton-mile, received during the last four months of 1920, the D. T. & I. received 2.13 cents in April, 1.76 cents in May and 1.78 cents in June. For the three months the receipts averaged 1.88 cents per ton-mile. During the same period the average revenue per ton-mile for all Class I roads increased only from 1.1 cents to 1.33 cents.

In December, 1920, the Detroit, Toledo & Ironton handled 44,396,000 net ton-miles, for which it received $470,350. Total operating revenues amounted to $508,666 and operating expenses to $686,736, or 134.4 per cent of the total operating revenues. To demonstrate the effect of the increase in revenue per ton-mile on operating results, had these 44,396,000 net ton-miles produced revenue at the same rate as the business handled in June, the freight revenue for the month of December would have amounted to $790,250 and the total revenues to $828,550. Instead of 134.4, the operating ratio would then have been 82.5, with no change in operating economy.

The Traffic Situation

This marked increase in the price received by the railroad for its commodity reflects two conditions. One is a marked increase in the volume of high grade traffic with a simultaneous decrease in the volume of low grade traffic; the other is the strengthened position of the road with respect to through rate divisions.

REVENUE TONS OF FREIGHT HANDLED BY THE D. T. & I., CLASSIFIED BY COMMODITIES

	Net tons loaded and received		
	Average per month, Sept., Oct. and Nov. 1920	April, 1921	May, 1921
Products of agriculture	24,271	8,671	7,419
Products of animals	986	2,164	2,522
Products of mines	308,635	132,374	175,932
Products of forests	12,357	9,964	9,973
Manufactures and miscellaneous (total)	100,662	157,988	232,584
Iron, pig and bloom	15,965	9,323	8,524
Bar and sheet iron, structural iron and pipe	8,287	20,920	50,165
Castings, machinery and boilers	3,149	15,024	18,554
Chemicals and explosives	9,701	3,698	4,724
Autos and auto trucks	668	65,691	76,098
Merchandise and l. c. l.	3,211	4,302	5,813
Other manufactures and miscellaneous	59,781	39,030	68,706
Total, all commodities	446,911	311,161	428,430

One of the tables presents the salient facts relative to the change in the character of the traffic. The large volume of coal traffic moving during the late months of last year has been replaced by a growing volume of high grade semi-finished products and automobiles, largely but not entirely controlled by the Ford Motor Company. At its Highland Park plant alone this company controls a daily movement in and out, of about 300 car loads of freight. Of approximately 6,000 cars a month shipped out of Detroit by all of the Ford industries, more than 5,000 are now being routed via the D. T. & I.

The Detroit, Toledo & Ironton, with its poor location and the meager volume of through traffic originating on its line, had never been in a position to secure what it considered adequate percentages of the through rates in which it participated. The road now has a large and growing volume of high grade traffic at its disposal at a time when traffic is scarce. This complete reversal of conditions undoubtedly is already reflected to some extent in the increased ton-mile revenues, and its complete effect on rate divisions will be a strong factor in maintaining a high average ton-mile revenue when normal business conditions increase the movement of coal and other low grade products.

Attitude of the New Management

Another factor having more or less effect on the traffic of the D., T. & I. is the purchasing power of the Ford interests. Instances are said to have occurred where Ford Motor Company purchases, either actual or prospective, have been the controlling influence in routing business, other than that controlled by Mr. Ford, over the rails of the D. T. & I.

While the Ford interests acquired possession of the D. T. & I. in August, 1920, the present management did not assume complete control of the property until March 4, 1921. From that time until July 1, 1921, no marked innovations were inaugurated, although considerable study was given to the operating organization and progress made towards its rearrangement and simplification according to general principles which Mr. Ford believes apply equally as well to railroading as to the conduct of an industry. On July 1 the first real operating innovations, already referred to, went into effect and on July 18 the road filed a freight schedule with the public utilities commission of Ohio providing for a 20 per cent reduction in rates between all points on its own line. None of these changes has been in effect long enough to supply any data relative to their effect on revenues or expenses.

In taking over the active handling of the property Mr. Ford's management has approached the problem with a full appreciation that it has little knowledge of the details of the railroad business and any intention to "show up" other railway managements is disclaimed by it. It is Mr. Ford's belief, however, that through years of development many practices and details of organization have been perpetuated in the railroad business which a close analysis would show to have little to justify them except precedent. Certain records, for instance, once established possible for a special purpose, continue to be compiled long after that purpose has been served and after their usefulness has ceased. In the matter of organization it is his belief that there has been a tendency towards the development of bureaucratic methods with an amount of red tape which tends to stifle the initiative of the man on the ground who is directly responsible for results.

In view of this conception of the situation, a lack of what is commonly termed expert knowledge of the details of the railroad business is considered by Mr. Ford an asset rather than a liability on the part of the new management, which approaches the problems involved in operating the property with a firm conviction that as a business, railroading does not differ essentially from any other industrial venture. The human element is believed to constitute the largest single factor in the operation of a railroad, just as it does in the conduct of an industry, and Mr. Ford believes that the same principles and methods of dealing with men which have led to satisfactory industrial relations in the plants of the Ford Motor Company will produce the same results in dealing with railway employees.

The Ford Labor Policies

The purpose of the labor policies established by the Ford Motor Company is the development of a stable force of satisfied employees. The advantages of stability with a minimum turnover are generally well recognized. The stability and efficiency of the force depends upon its loyalty; and loyalty, in the opinion of Mr. Ford, is only rightly to be expected from employees who are satisfied with their wages and working conditions.

The policies adopted by the Ford Motor Company with respect to wages and working conditions are founded on the belief that it is better to pay a minimum number of employees a wage high enough to justify the individual in giving to the management his unqualified support and the utmost effort of which he is capable, rather than to spend the same or a larger amount of money to meet a payroll of larger numbers of less satisfied men, who feel justified in giving considerably less than their best efforts. In this connection it is pointed out that the purpose of the restrictive working conditions imposed by labor unions is primarily to increase labor earnings—that they are not an end in themselves. Hence, if the men are satisfied with their wages, these waste-breeding restrictions can be abolished.

These reasons have been considered sufficient to justify the extension of the policies in force in the plants of the Ford Motor Company to the Detroit, Toledo & Ironton. Accordingly, on July 1, instead of putting into effect the reduced wage rates established by the United States Railroad Labor Board, Mr. Ford established the $6 a day minimum wage scale which had the effect of a general advance in wages. The rates affecting some of the more important classes of employees, compared with those established by the Labor Board, are given in one of the tables. In paying these wages the management has adopted the policy of refusing to hire experienced railroad men who are employed by other roads.

In addition to the increased wage scale, a bonus is to be paid periodically, varying with length of service and rate of pay from $50 to $150 a year for employees receiving $6 a day, and from $170 to $270 a year for employees with a rate of $10.80 a day. The bonus also applies to salaried employees whose salaries do not exceed $250 a month.

The six-day week with no train movement from 6 o'clock Saturday night till 6 o'clock Monday morning, except as required by live stock or perishable shipments, has been inaugurated in order that as nearly as possible all employees may have one day of rest in seven, and have it on the same day as men in other lines of work. This has been worked out so that as low as 40 men on the entire line are required to work on Sunday. These include about 10 bill clerks who work a few hours in the morning on shipments received late Saturday, two yard engine crews and the men employed in the operation of joint railroad crossings.

Employees are paid on the basis of eight hours' work per day, 26 days a month, or 208 hours a month. As far as possible, train service employees and others whose duties subject them to call, are laid off at the completion of 208 hours' service, if completed before the end of the month.

During the four months, September to December, 1920, inclusive, after the present railway freight rates were fixed, the D. T. & I. handled an average of 49,246,000 ton-miles of revenue freight per month and had freight earnings averaging $493,800 a month. In the months of April, May and June, 1921, the road handled an average freight business of 37,093,000 ton-miles a month and earned from it an average of $694,203 a month. In other words, its average freight business in these three months was *almost 25 per cent less* than in the last four months of 1920, while its average monthly freight earnings were *over 40 per cent greater.*

WAGE RATES ON THE D. T. & I., COMPARED WITH LABOR BOARD SCALE

Class of employee	Average daily rates: D. T. & I.	Decision 147, U. S. Labor Board
Clerks	$150—$225*	$4.21—$4.77
Section foremen	6.40— 6.80	4.34
Sectionmen	6.00	3.02
Other unskilled laborers	6.00	3.05
Carpenters	7.20	5.03
Crossing flagmen and gatemen	6.00	2.65
Signal maintainers	6.80	5.74
Foremen, mechanical department	220— 270*	6.37— 9.13
Machinists	7.60	6.18
Boilermakers	7.60	6.25
Blacksmiths	7.20	6.28
Carmen	7.20	5.84
Helpers	6.00— 6.40	4.36
Passenger engineers	375*	6.00
Passenger firemen	275*	4.50
Freight engineers	375*	7.05— 7.44
Freight firemen	275*	5.25— 5.38
Yard engineers	375*	6.51
Yard firemen	275*	5.03
Passenger conductors	375*	6.40
Passenger brakemen	225*	4.40
Freight conductors	375*	5.80— 6.32
Freight brakemen	225*	4.48— 4.88
Yard conductors	375*	6.32
Yard brakemen	225*	5.84
Telegraph operators	6.40	4.82

*Monthly basis for eight-hour day and six-day week.

In reorganizing the forces the central idea has been simplification and the elimination of duplication of effort, closer co-ordination of the different departments and the elimination of as many of the intermediate agencies in the control of the forces as possible. At the time Mr. Ford acquired control of the property in August, 1920, there were 2,723 employees on the road. In March, 1921, the number had been reduced to 1,326. In the rearrangement of runs necessary to provide for the eight-hour day and the six-day week in train service, it was necessary to increase the number of employees. There was also a seasonal increase in the maintenance of way department. There were 1,822 employees in the roll for July.

Reduction in Maintenance Forces

A classified list of the employees on the road during these three months is shown in one of the tables. It will be noted that the largest decreases were in the maintenance departments. The August, 1920, roll is said to have been about 500 above a normal average, nearly 300 of this number being accounted for in the maintenance of way department, which averaged about 1,000 employees during federal control. The reduction in the number of employees in this department has been effected largely by reducing section gangs to a foreman and two men each, the foreman being required to work with the men. These gangs, however, are not expected to take care of all of the routine maintenance work on their territories the year around, while heavier work is performed with floating gangs of 15 or 20 men which are moved from section to section as conditions require. Considerable work is also accomplished by utilizing the idle time of such men as crossing watchmen and pumpers on minor track maintenance, such as cutting weeds, repairing road crossings, looking after joint bolts, spikes, etc.

Through the late summer to the end of last year about 3,000 tons of 85-lb. rail was laid on the north end of the line. A considerable amount of 56-lb. and 60-lb. rail further south was replaced with relaying rail, about 200,000 ties were renewed and some ballast inserted. This work was done with three extra gangs of 45 to 60 men each. Since the middle of May this year, four gangs of 15 men each have been renewing ties at the rate of 20,000 a month and putting from 12 to 15 fifty-ton cars of stone ballast a day under the track.

NUMBER OF EMPLOYEES ON THE D. T. & I. IN AUGUST, 1920, AND MARCH, AND JULY, 1921

	August, 1920	March, 1921	July, 1921
General and accounting	128	105	111
Maintenance of way	1,291	377	646
Mechanical	628	345	466
Station forces	276	210	220
Trainmen	229	167	225
Enginemen	171	122	154
Total	2,723	1,326	1,822

During this same period last year, the Jackson, Ohio, shops averaged a monthly output of four locomotives with heavy repairs. During the past few months with about 60

per cent of last year's force, the output has averaged at the rate of slightly more than four locomotives a month. In comparing the total number of employees in the department during the two periods, however, account must be taken of the fact that an abnormal volume of car repair work was in progress during the earlier period.

Reorganization of Accounting Department

The accounting department, organized on the divisional system, formerly maintained three offices, one at Jackson, Ohio, the location of the principal repair shops, one at Springfield, Ohio, and one at Detroit, Mich. The work of these three offices has been consolidated successively by moving the Jackson office to Springfield and finally moving the Springfield office to Detroit, where all of the work of the department is now conducted. Centralizing the work of this department has brought to light a number of duplications, the elimination of which has made possible a reduction in the clerical forces from 66 to 50 and the dropping of one supervisor.

All original documents, such as time slips and material slips, are sent direct to the auditor's office for distribution. Instead of making out the usual payrolls, pay checks are made out from the distribution sheets in case of time slips and where time clock cards are used, from them direct. This has made it possible to pay on the fifth of the month following the close of the payroll period, instead of the fifteenth as was the former practice. Also instead of maintaining a rate clerk in the auditor's office to check rates on interline waybills, this work is now done by the rate clerk in the traffic department, to whom all questions of the correctness of rates or divisions must be referred for settlement in any case. This has saved two rate clerks and a mail boy. In all, 73 monthly reports between the divisional and general offices or between departments, have been found to be duplications and have been eliminated.

The freight earnings of the D. T. & I. are now running at the rate of approximately $8,000,000 a year. Therefore, other things remaining equal, a reduction of 20 per cent in them would reduce the road's earnings by about $1,600,000 a year. On the other hand, the freight bills paid by the Ford industries to all the railways amount to from at least $15,000,000 to $20,000,000 a year. Therefore, a reduction of 20 per cent in freight rates by all the railways would reduce the freight bills of the Ford Motor Company by $3,000,000 to $4,000,000 a year. In other words, Mr. Ford as a shipper would be sure to gain millions of dollars more by a reduction in rates than he could possibly lose as a railroad owner.

The Station Agent's Opportunity

One of the simplifications of the organization which the new management is developing is the utilization of local station agents in the settlement of freight loss and damage claims. It is believed that the best interests of the road demand that the local agents be among the biggest men in their communities and that all matters affecting the relations of the railroad with the community should be handled by the agent if he is to justify his title. Furthermore, placing this responsibility on the agent is expected to effect a material saving in legal fees, which will be confined as far as possible to cases requiring technical legal advice. It is the belief of the present management that the legal department is too frequently made a dumping ground by other departments for many difficulties which, were they required themselves to settle, they would be more careful to prevent.

Local agents are given complete jurisdiction over their territory. If a small force of car repairers, or an inspector, are employed at an interchange point where conditions do not provide enough work to keep them steadily engaged, they are subject to the orders of the agent for warehouse work, or clerical work if they prove adaptable for such duties and as circumstances require.

No More Off-Line Traffic Agencies

The discontinuance of off-line agencies, effective July 1, is based on the belief of officers of the Ford Motor Company from their own experience, that off-line traffic representatives seldom represent their railroads effectively. Few of such representatives, they believe, have an adequate knowledge of the percentages of through rates accruing to their railroads or of the kind of service their roads can render economically. They are, therefore, neither in a position to serve the best interests of their roads intelligently or to guarantee the performance of the service they will promise in order to secure the routing of a few car loads of freight over their lines.

Expressing the belief that competition for traffic should aim at the development of a freight movement along natural channels and that solicitation should be based purely on the service which the road can render, the present management proposes to substitute for the frequent calls of a local representative, out of touch with the actual conditions on the property, the less frequent calls of an officer thoroughly conversant with the operation of the road, the class of traffic it is best adapted to handle and the kind of business producing the best revenue—an officer who can represent the company adequately and who knows that the kind of service promised can and will actually be performed. In order to provide close co-operation between the traffic and operating departments, the head of the traffic department has been made an assistant to the chief operating officer, with duties somewhat similar to those associated with the title of superintendent of transportation.

OPERATING STATISTICS

Reported by the D. T. & I. January to June, 1920, and 1921, and September to December, 1920

	Passenger train miles	Freight train miles	Gross ton miles (1,000)	Per cent net to G. T. M.	Tons per loaded car	Gross tons per train	Transportation expense	Transportation expense per train mile (pass. and freight)
1920								
January	29,000	56,000	80,102	57.0	42.0	1,422	$237,055	$2.79
February	26,000	54,000	81,542	60.0	40.0	1,510	190,278	2.38
March	29,000	53,000	75,864	57.7	39.2	1,419	172,276	2.10
April	28,000	48,000	71,172	58.5	38.8	1,470	159,461	2.10
May	28,000	54,000	87,445	59.6	36.7	1,613	183,901	2.24
June	28,000	49,000	78,112	58.4	38.0	1,632	200,736	2.60
September	30,000	57,000	92,874	58.3	42.1	1,630	247,070*	...
October	30,000	60,000	94,196	59.7	45.5	1,570	271,726*	...
November	28,000	61,000	92,355	57.4	42.2	1,510	254,540	2.86
December	30,000	60,000	82,164	53.4	38.9	1,370	224,183	2.49
1921								
January	28,000	34,000	35,613	46.5	52.4	1,042	159,226	2.58
February	25,000	31,000	27,441	44.0	26.9	894	126,741	2.26
March	30,000	44,000	57,716	48.0	25.8	1,300	170,196	2.30
April	27,000	59,000	79,451	47.5	24.8	1,354	183,832	2.14
May	28,000	67,000	98,537	50.2	27.4	1,463	189,236	1.99
June	27,000	68,000	95,361	48.5	25.7	1,395	188,517	1.98

*Some back pay, incidental to the wage award of July 20, 1920, included in this month's accounts.

What Have the New Policies Accomplished?

There are two distinct possibilities for changes in the net operating return under the new management. The marked improvement in revenues is a matter of business relationships which would not have been essentially different had the D. T. & I. purchased the Ford Motor Company. The effect of the policies of Mr. Ford's management on the cost of operating the property is quite a different matter and must be studied apart from consideration of the revenues. A comprehensive judgment of the effect of the more distinctive Ford policies must await the returns from several months' operation. But the effect of the reductions in the number of employees and changes of organization which have been referred to above should already be reflected in the operating expenses for April, May and June.

Owing to the inability to allocate operating expenses to freight and passenger service and because of the fact that maintenance expenditures over a short period may have little relation to the volume of traffic, it is impossible to compare total operating expenses to determine with any degree of accuracy what effect certain policies may have had on operating costs. A rough comparison of the train mile cost of conducting transportation, however, indicates that there has been a well-defined tendency toward improvement since last October. By referring to the table of operating statistics it will be seen that since October there has been a steady decline in the transportation expense per train mile (passenger and freight) from $3.01 to $1.98 in June of this year. This well-marked decrease has been steadily maintained, except for increases in January and March, through a period during which there has been both a sharp decline and a sharp increase in the volume of traffic, and a decrease followed by an increase in the gross tons per train. It is evident that well-defined improvements had been made prior to the time when Mr. Ford assumed active control of the property on March 4, 1921, but the reduction of transportation expense per train mile to $1.98 in June, as compared with $2.10 in March and April, 1920, under lower wage scales, marks a distinct accomplishment.

The facts show that under the Ford management the financial results of the Detroit, Toledo & Ironton have been very greatly improved. They also show that no miracle has been worked. The results obtained thus far have been due almost entirely to the circumstance that the ownership of the Detroit, Toledo & Ironton has been acquired by one of the largest manufacturers in the country, and that Mr. Ford has used his position as a very large shipper in the country to do things on the D. T. & I. which neither he nor anybody else could have done without being such a large shipper. * * * * Furthermore, the management of the D. T. & I., in common with all the other railways, was able, partly because of the smaller traffic handled by it and partly owing to other causes, to make large reductions in its operating expenses.

Aside from the effect of the decreased payroll, one of the factors entering into the decreased transportation expense is the fact that a large part of the traffic during recent months has moved over the Northern division, which extends from Detroit to Springfield, Ohio, with a branch from Dundee, Mich., to Toledo, Ohio. During a recent month the total car movement on this division amounted to about 42,000, while that over the Southern division was about 12,400. The greatest improvement in the track has been made on the north end of the line. Furthermore, the nature of the traffic permits the delivery to interchange points of a considerable portion of the movement in train-load lots.

Another important factor is a decrease in unit coal consumption, amounting to about 20 per cent as compared with the same months last year. This is largely owing to a marked improvement in quality; the freedom from confiscation, generally practiced last year, has also tended to reduce the prices.

The important question with respect to maintenance is not so much the relation of expenditure to volume of traffic as whether or not the property is being currently maintained. An extensive program of track improvement was inaugurated under the former management. J. A. Gordon, the former president of the road, is quoted in the Wall Street Journal to the effect that up to the fall of 1920 most of the 220 miles between Detroit and Springfield, Ohio, was laid with 60-lb. rail over 25 years old. Its rehabilitation to a standard justified by the present prospects of the property has not yet been completed. It is not the policy of the present management to carry out this rehabilitation faster than is justified by the earnings of the property. The railroad must pay its own way.

During 1919 the total maintenance of way expenditures ran at the rate of $2,490 per mile of line. Last year with a considerable amount of rehabilitation work, they averaged $4,170 per mile of line, the greater part of which were made after Mr. Ford acquired control. For the four months since Mr. Ford has had active charge of the property, they have run at the rate of $2,540 a mile per year. Tie renewals and ballasting are being carried on at a rate which, except for that during the last half of last year, is probably a record for the property. Track conditions are improving rather than deteriorating.

Maintenance of equipment expenditures have followed a general course similar to those in the maintenance of way department. A comparison of the Detroit, Toledo & Ironton with all Class I roads shows that the average expenditures for locomotive maintenance have closely approximated the average for all of the Class I roads, indicating a fair average condition. But the expenditures per unit of freight and passenger car equipment have been decidedly less than the Class I average. Retirements have been especially heavy during the past two years, for, from an ownership of 3,006 freight cars in 1918, the number has now decreased to a total of only about 1,700 in revenue service.

During the four months of the current year since March 1, the expenditures for maintenance of equipment were $334,479; during the same period of 1920 the amount was $317,836. During the last four months of 1920 maintenance of equipment expenditures aggregated $646,314. Here again Mr. Ford has the benefit of an intensive maintenance program of several months' duration, particularly with respect to cars, carried out by the former management, but the amount of work being obtained for the present expenditures is probably meeting current requirements.

While these general conclusions can be drawn on the basis of the data available, no adequate comparison of the effectiveness of maintenance expenditures can be drawn until the

maintenance programs of the present management have reached a current level, free from the disturbing influence of much needed rehabilitation.

Traffic expenses during the four months of Mr. Ford's management averaged $6,942 monthly, as compared with $8,469 during the last four months of 1920. General expense decreased to an average of $16,997 a month from $20,493 a month during the same periods.

Extent of Improvements in Operating Expenses

Again applying the conditions created by Mr. Ford's management to the operations of the month of December, 1920, a rough idea may be obtained as to the effects on the operating ratio of the operating economies effected by Mr. Ford. An estimate of the effect of the improvement in operating expenses is shown in one of the tables. No allowance has been made for decreased maintenance expenditures, as the present operation of the property is undoubtedly benefiting from the compatatively heavy maintenance program in progress at the close of the year and it is impossible to estimate with any degree of accuracy the extent to which productive efficiency in the maintenance department has increased. Transportation expense is estimated on the basis of June conditions and the reductions in traffic and general expenses, as reflected in the March to June average, are taken at their face value.

OPERATING EXPENSE RATES UNDER THE FORD MANAGEMENT APPLIED TO DECEMBER, 1920, OPERATIONS OF THE D. T. & I.

	Actual	Estimated
Maintenance of way and structures	$185,354	$185,354
Maintenance of equipment	244,676	244,676
Traffic expense	8,908	6,942*
Transportation expense	224,183	178,200†
General expense	20,706	16,997*
Total	$683.827	$632,169
Revenues	508,666	508,666
Operating ratio	134	124

*Four months' average, March to June, 1921, inclusive.
†90,000 passenger and freight train miles at $1.98 per mile.

On this basis credit may be given to the new management for a decrease in the operating ratio from 134 per cent to 124 per cent, without any allowance for legitimate decreases in maintenance expenses of uncertain amount.

The Public Service of the D. T. & I.

The D. T. & I. has been called a plant facility of the Ford industries in and around Detroit, rather than a common carrier. It is this relationship in a large measure which has made possible the immediate financial success of Mr. Ford's management. The D. T. & I. has always lacked certain essential features of a common carrier. In the first place, it has no terminals in the city of Detroit, the one point on the line offering a large volume of traffic. The service of such terminals cannot be dispensed with although the investment required to provide them is a burden on the remainder of the properties. Mr. Ford's ownership of the D. T. & I. has not provided the city of Detroit with any additional terminal facilities; it has made possible the diversion of traffic to other channels of main line movement.

Again, many of the through routes in which the D. T. & I. is now participating are not the most direct routes. In each case, however, even where the haul exceeds the direct route as much as 100 to 300 miles, a much quicker delivery is claimed. It has been stated this improvement has reduced the average time in transit for the Ford Motor Company from three weeks to two weeks, thereby reducing inventories by approximately $22,000,000. Typical of the measures by which this has been accomplished is the demand of the D. T. & I. on its connections that transfer tracks must be pulled within 20 minutes of the time of the D. T. & I. delivery. The delivery of traffic in many cases in train load lots is a factor in securing favorable action from connections. It must be remembered that this improved service is being obtained at a time when no road is suffering from congestion.

The General Application of Ford's Methods

Mr. Ford has applied business methods to his own combined industrial and railroad problem with results mutually advantageous to both businesses. But what is enriching the D. T. & I. has formerly gone into the pockets of competing roads. To the extent that he has been able to increase the intensity with which the D. T. & I. property is utilized, other roads have become idle. Mr. Ford has reduced local rates on the D. T. & I. But a comparatively small proportion of the D. T. & I. traffic originates and terminates on its own line. It is estimated that 60 per cent of the present traffic of the road is controlled by the Ford Motor Company, little of which originates or terminates on its own rails.

Mr. Ford has started a movement for a general rate reduction of 20 per cent, contending that lower rates will do much to stimulate business. The freight bills of the Ford industries are estimated to aggregate from $15,000,000 to $20,000,000 a year. At the rate maintained in April, May and June the freight revenues of the D. T. & I. will aggregate $8,000,000 a year. Although Mr. Ford is said to have been unaware of the obvious effect of this fact until it was called to his attention, it insures him against the consequences of his act in case it should fail to effect the improvement in railroad conditions which he expects.

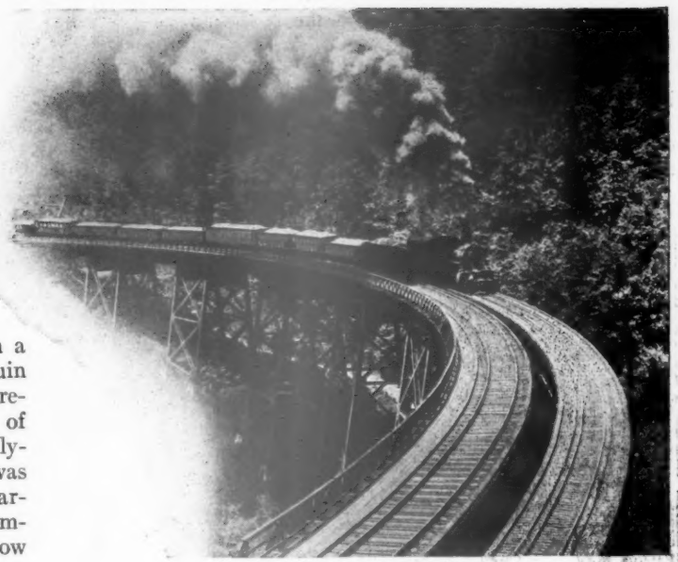
Consideration of these facts does not encourage the belief that Mr. Ford has discovered a panacea for all railroad ills. His operating policies, however, have so far been marked with a degree of success sufficient to justify the railroad world in watching their continued progress with an open mind. Time alone will demonstrate their wisdom, or otherwise. If they are successful the entire railway industry will profit therefrom; if they fail, the loss will be Mr. Ford's. But in measuring their results, the marked effect on revenues of the business relationship between Mr. Ford the shipper and Mr. Ford the railroad man must be kept clearly in mind.

Darling in the Charleston News and Courier.

They Might Come Down at Least as Far as the Dog

Virginian Builds Double Track to Relieve Congestion

Steep Grades and Sharp Curves in Mountainous Region Necessitate Heavy Construction



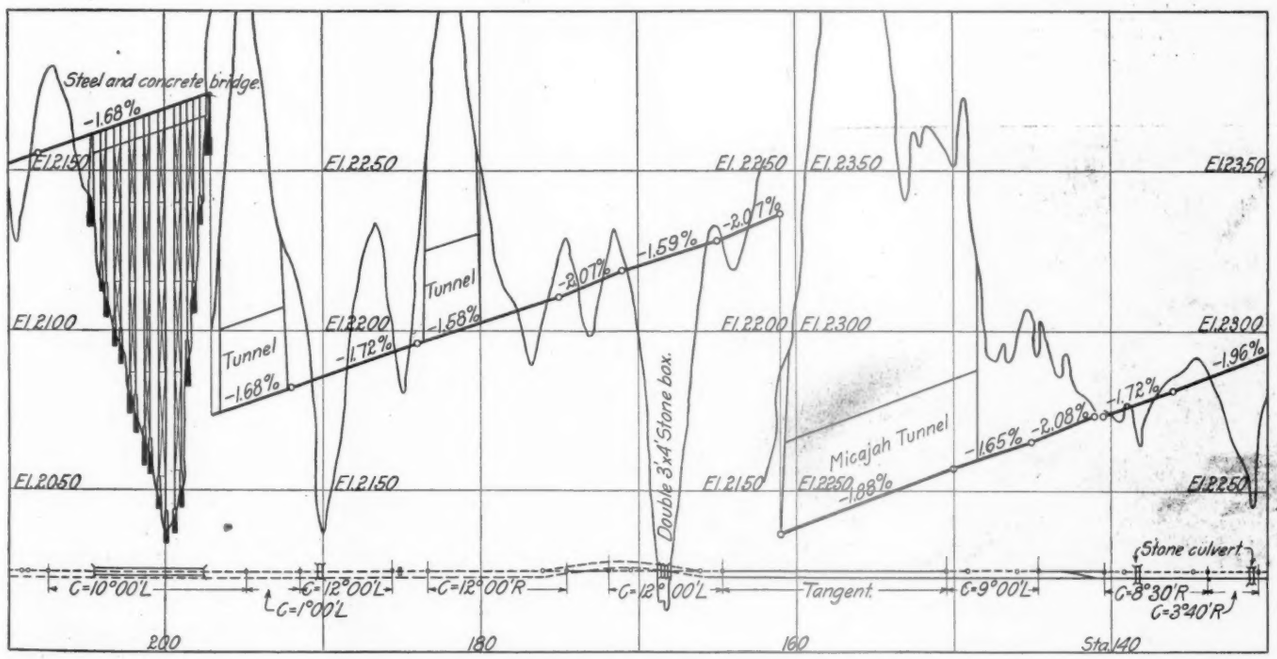
Rounding One of the Many Curves on the Way to Tidewater

THE VIRGINIAN RAILWAY now has under construction a second track between Elmore, W. Va., and Algonquin or Clark's Gap as it is more commonly called, to relieve the congestion of this section of about 15.5 miles of heavy grades and sharp curvature through the mountains lying to the west of Princeton, W. Va., which section was limiting the capacity of the road. This work has been carried out in three stages, two of which have now been completed, while the third and heaviest, started in 1918, is now nearing completion. The double-tracking of this last section, which totals approximately five miles of line on a grade of 2.07 per cent compensated for curvature includes the widening of five tunnels, and the reconstruction of an equal number of high steel viaducts for an additional track. As this work was carried on under many difficulties, construction methods were developed which are more or less unusual, chief among which is the manner in which a steel shield was developed and utilized in the driving of the tunnel headings for the second track.

The Virginian operates 442 miles of main line between Deepwater, W. Va., and tidewater at Sewalls Point near Norfolk, Va., as well as a considerable mileage of branch lines in the section of West Virginia between Deepwater and Elmore. Its traffic consists almost entirely of coal originating in this section.

As the main characteristic of the Virginian's method of operation is its heavy train loading, as described in the *Railway Age* of May 27, page 1201, this section of single track line with its heavy grade has proved a serious hindrance to the expansion of the road's business. All eastbound loaded cars from both the main line west of Elmore and the Winding Gulf branch, as well as west-bound empties destined for the coal mines, are received at Elmore yard where they are made up into trains and dispatched. An average of from six to seven heavy "drags" in addition to local and merchandise freights and two passenger trains are dispatched eastward over Clark's Gap hill daily with approximately the same number of trains moving west.

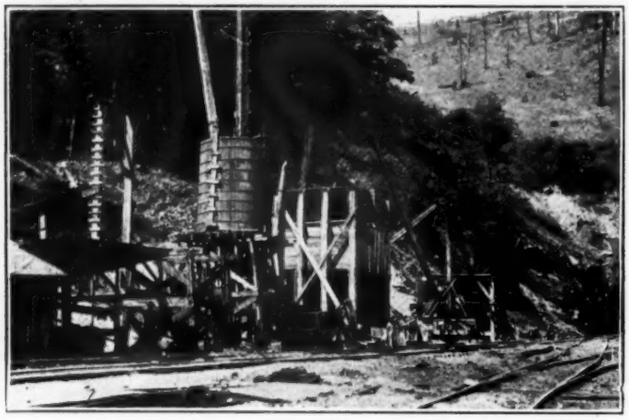
The eastbound coal trains contain from 70 to 80 cars. These are hauled up the mountain to the summit at Clark's Gap by one 2-6-6-0 Mallet at the head end and two 2-10-10-2 Mallets, cut in as helpers, which are released at the summit and return to Elmore. The run up this hill usually takes from 1½ to 2 hrs. for these heavy drags, mak-



Profile of a Typical Section of the Clark's Gap Work

ing a slow eastbound movement out of the yard. The return of the helpers further complicates the operating problem, since it adds to the number of west bound movements.

It was in anticipation of the problems that would be imposed by such a traffic that the Virginian started to double track this Elmore-Clark's Gap section several years ago. To date a second track has been completed and is in operation between the junction of the Winding Gulf branch with the main line a short distance west of Elmore and a point about



Setting Up the Concrete Plant at the Micajah Tunnel

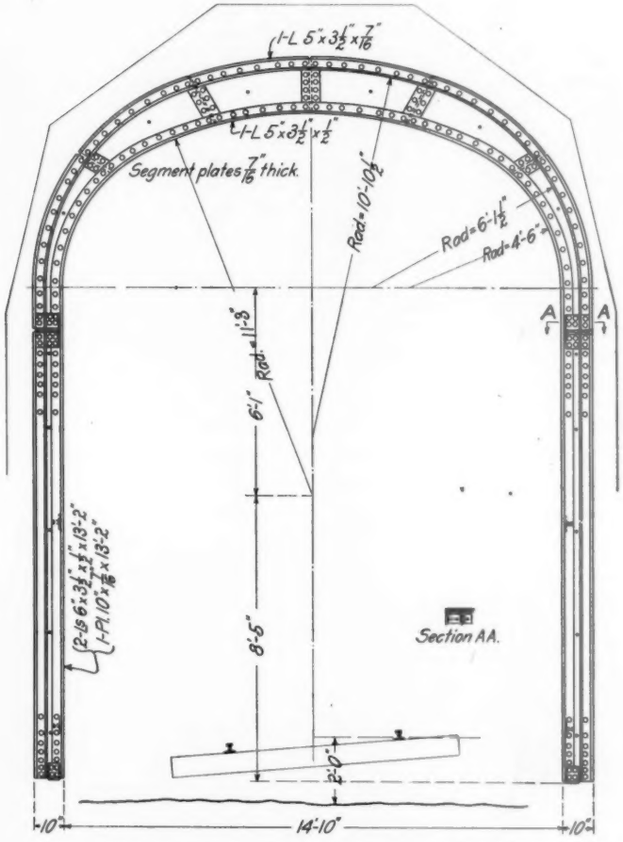
two miles east of Herndon, a distance of about 9 miles, as well as between the east end of the Micajah tunnel and the west end of Clark's Gap tunnel, a distance of 2½ miles. The work of widening the tunnels for second track on the remaining section has been completed except for a short section at one end of the Clark's Gap tunnel where the removal of the bench has not been entirely finished. Track has either been laid or is being laid on the remainder of the work and it is expected that the entire section of double track will be in operation within a short time. Automatic

A Pair of the Tunnel Shield Arches Before Applying the Lagging

block signals are being installed between Elmore and Algonquin as a further aid to the movement of traffic over this section.

The work on the lower end, i. e., that part which has been finished between Elmore and Herndon was comparatively light and while it contained a few high trestles and heavy cuts and fills it did not begin to approach in magnitude the remainder of the work on Clark's Gap hill. On this upper section there are five steel viaducts ranging in height from 125 ft. to 150 ft. and with an aggregate length of 2,853 ft.; five tunnels with an aggregate length of 3,680 ft.; one rock fill 110 ft. in height and an almost constant succession of heavy cuts and fills varying in depth or height from 25 ft. to 60 ft. The curves are very sharp and have all been spiralled. The effect of the topography of this country on the alinement is well shown by the fact that in all cases but one the tunnels, either in whole or in part, are on curves most of which are 10 deg. and 12 deg.

In two instances high viaducts lead directly to the portals of the tunnels and this condition was the chief factor in the decision to widen the existing tunnels rather than to drive separate bores. The viaducts had been constructed for double track originally, although only two lines of girders had been placed to carry a single track. This imposed a limiting condition upon the distance which the tracks could be spread



The Frame for the Steel Tunnel Shield

without undue cost of building new viaducts to fit the alinement necessary for separate tunnels. While studies were made covering the construction of double track by using separate tunnels it was finally decided to widen the original ones and use the viaducts as they were.

The five tunnels to be widened vary in length from 347 ft. to 1,252 ft. and are all through rock which is chiefly shale or hard sandstone stratified and often underlaid or intermixed with slate and coal seams. It was of course essential to maintain uninterrupted traffic and as the rock required blasting it then became necessary to provide some form of shield to prevent rock, old lining or miscellaneous construction and other materials from falling down or working out on the line. To meet this requirement a sectional shield was developed which could be set up inside the old tunnel without any changes in or disturbance to the old lining and which could be moved ahead quickly as the work progressed. Each section of the shield consisted of two arched ribs

fastened four feet apart and supported by light steel posts. Each arch rib was built up by riveting steel plates, cut to shape, to steel angle bars bent to the desired radii as shown in the drawing. The total inside width is 14 ft. 10 in. and the maximum overhead clearance is about 18 ft. 2 in. from top of rail. The lagging, consisting of 4-in. by 8-in. planking cut into 4 ft. lengths is bolted to the ribs, thus making unit sections 4 ft. long and completely enclosed over the top and sides.

The old tunnels, which were timber lined, had a clear width inside of 18 ft. and an overhead clearance of 21 ft. 6 in. from top of rail, while the double track tunnel gives a clear width on curves of 32 ft. and on tangents of 30 ft. 6

One of the Many Heavy Cuts Which Had to Be Widened

in. and an overhead clearance of about 24 ft. from the top of rail. The design is that of a three-centered arch of reinforced concrete with a minimum thickness of 2 ft. 2 in., backed up with the usual timber lining consisting of 12-in. by 12-in. posts supporting 12-in. by 12-in. ribs and completely enclosed by 3-in. lagging on the sides and 4-in. over the top. Thus in order to obtain the necessary clearance from the center line of the existing track it was necessary to excavate about 2 ft. of the side wall of the tunnel beyond the limit of its old lining on one side while the remainder of the necessary width for double track was secured by excavation on the opposite side of the center line.

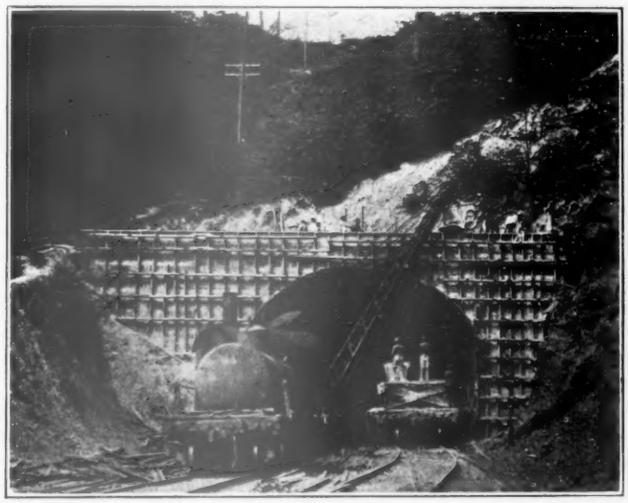
In carrying out the actual work of widening a tunnel, 15 of these steel sections were erected by the aid of a hand derrick mounted on a flat car, inside the regular lining of the old bore. This gave a length of 60 ft. over which the work could be carried on with complete protection to the operating track beneath. With the protective shield in place, the driving of a heading of the necessary double track width was started. On this work the heading was driven through for the entire length of the tunnel before any work was started on the removal of the bench. This plan was followed in order that the excavated material could be hauled out in the most economical way. The work of removing the 2 ft. section on one side, the section over the top of the old arch and approximately 18 ft. on the second track side was carried on simultaneously.

Air drills were used for this work, the lighter or hand-type being employed in preference to the tripod type. From four to six were in operation on each heading. As the rock was very hard in most cases, the material was blasted out, after which it was loaded into narrow-gage dump cars which were operated over a track laid along the bench as excavated. A platform was constructed at the portal on which the cars could be run and their contents were trapped into standard-gage cars. On an average about 22½ cu. yd. of material was removed per lineal ft. of tunnel. Of this about 13 cu. yd. was from the heading, including the small section on one side and 9½ cu. yd. from the bench. Progress at times was exceedingly slow, long stretches being excavated at a rate of not over one lineal foot per day.

As the removal of the heading was accomplished, the new timbering was erected and one or more sections of the shield moved ahead, the face of the heading being kept approximately three sections behind the forward end of the shield. With the heading driven through, the bench was broken or shaken up by blasting where needed and the material removed with a steam shovel which unloaded it into air dump cars operating on the main line between regular trains. The cuts along the line were widened by blasting where necessary and the material removed with steam shovels and standard-gage dump cars. All the material excavated from the cuts and tunnels, amounting to about 250,000 cu. yd., was used in widening fills for the double track.

The compressed air to operate the various tools as well as the necessary current for the lighting equipment used in the tunnel work and at the camps was furnished by two separate compressor and electric lighting installations, one located to handle the work at the upper end including the Clark's Gap tunnel and a shorter one nearby, and the other to supply the equipment at the Micajah tunnel and two others at the lower end of the work. Air was supplied through a 4-in. main from each of these plant installations, the maximum length of pipe being approximately 1¼ miles.

Three of the tunnels have been lined with concrete and the portals finished while the work of pouring the remaining two at Clark's Gap and Micajah is now under way. Two separate concrete plants have been set up to supply the material for the work at Micajah and at Clark's Gap. Each of these plants has a one-yard mixer and is completely equipped with derricks and cranes to handle the raw material and the mixed product. The concrete for pouring is discharged by the mixer into clamshell buckets which are



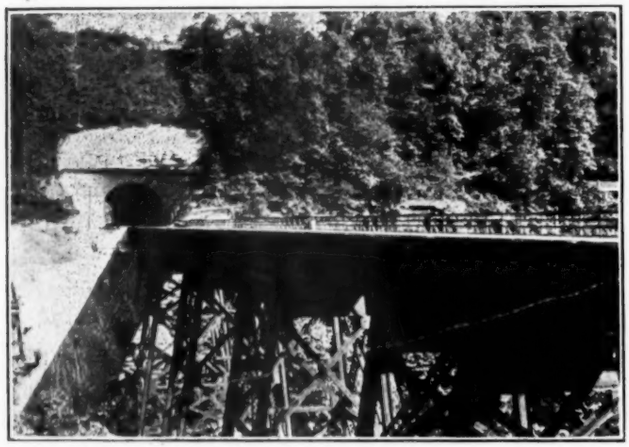
The Way the Concrete for the Portals Was Handled

picked up and unloaded on a scaffold car. About two cubic yards are carried into the tunnel at each trip of the scaffold car where it is placed in the forms by hand shoveling after which it is well rammed into the space between the ribs and against the underside of the lagging. The concrete is reinforced with ⅞-in. rods placed both vertically and horizontally. Locomotive cranes are used for conveying and depositing the material in the forms for the portals, handling the buckets direct from the mixer to the forms.

The work of adding the second track on the viaducts involved no particular difficulties but in some instances called

for careful planning and fast work. Where the old line followed one side of the trestle it was only necessary to place two new lines of girders and lay the decking and rails. In two instances where the old track was located on the center line of the viaduct new girders were placed on each side and connected up. An entire new set of bridge timbers was then cut and framed complete for insertion after which the old track was quickly torn out, the new timbers laid and the track made ready for traffic. In working in this manner there was little or no delay to trains. The new second track is being laid chiefly with 130-lb. rail, a substantial increase over the 100-lb. rail ordinarily used in this section.

The work of double tracking Clark's Gap Hill has been



One of the Few Stretches of Tangent

planned by and the construction has been carried out under the direction of the engineering department of the Virginian Railway, H. Fernstrom, chief engineer; A. M. Traugott, assistant chief engineer, and J. C. Guion, resident engineer in direct charge of the work in the field. The contractors on this work are J. V. Boxley & Co. and Boxley, Goodwin & Bray, subsidiary companies of W. W. Boxley & Co., Roanoke, Va., to whom the original contract was let.

The Purchase, Inspection and Distribution of Cross Ties*

PRIOR TO THE RETURN of the railroads to their owners on March 1, 1920, some of them had started toward normalcy in the procurement of their cross-ties by making tentative arrangements along the lines of their former methods of purchase. In not a few instances the practice established during federal control of dealing direct with any producers of ties along a railroad was continued where it had not been in vogue before 1918. All railroads which adopted the sight-draft method of paying for ties during 1918-1919 continued the practice. Most railroads which learned during the war that their local production could be stimulated persisted in keeping in touch with the supply along their lines. Some railroads which got the habit of co-operation while the government insisted on it, found it possible to acquire ties of the groups they did not desire and to transfer them together with their surplus production, to roads which used such ties, and which in return did not compete with the local road for any ties produced along its lines.

Cross-tie buying became normal soon after March 1, 1920, and the strenuous competition which developed in certain fields during the summer resulted in exorbitant prices. It is now seen, even by the producers who profited thereby, that the prices paid were the result of ruinous competition, were not justified, and were not good for the tie industry. A central purchasing agency could prevent a repetition of this vicious competition for ties among railroads, but the committee regards such an agency as impracticable. It believes that the sentiment against unwise competition is developing steadily and that 1920 saw less of it than might have been expected from past performances under similar conditions of supply and demand.

As practices of general application which have been tried under conditions of control and of freedom, the committee recommends the adoption of the following:

That each railroad adopt all means compatible with its conditions and organization to procure along its own lines as large a portion of its tie requirements as possible.

That each railroad adopt a method of paying cash for its ties, as a means for maintaining production at a maximum.

That each railroad along which ties in excess of its own requirements are produced endeavor to make arrangements with railroads needing such ties for their sale and shipment under conditions which will be mutually satisfactory.

That all railroads purchase cross-ties under the uniform requirements of the standard specification for cross-ties of the American Railway Engineering Association.

The preservative treatment of wood to prevent decay yearly becomes a more important factor in the economical maintenance of railroads. This is especially true in cross-ties.

During 1920 there was less than the usual variation in the inspection of cross-ties by competing railroads. This was undoubtedly the result of the marked change in the manufacture of ties which resulted from nearly two years of adherence to a uniform standard applied everywhere quite consistently. The full benefits of a standard specification are not to be had if the specification ceases to be a standard through lack of uniformity in the application of its requirements by inspectors.

This committee is aware of a well-defined conviction in the minds of some members that only by an American Railway Association control of the inspection of forest products purchased by railroads can the disadvantages to all concerned of the present competitive system be avoided. Undoubtedly a central supervision of inspection would result in greater uniformity in practice, in lower costs through fuller use of fewer inspectors, and in more prompt service for the shippers, and the committee can advance no valid argument against the creation of a Bureau of Forest Products in the American Railway Association, charged with the supervision of inspection and the dissemination of information of value to members in connection with the purchase and storage of forest products, but the committee feels that it is unfair to railroads generally to assume that practical uniformity in cross-tie procurement cannot be had prior to a trial under the new conditions brought about through the existence of a standard specification worked out and adopted by an independent railroad association and agreed to and adopted in all essential respects by the producers' association.

The report is signed by J. H. Waterman (chairman) Chicago, Burlington & Quincy; John Foley, Pennsylvania System; G. H. Jenkins, Grand Trunk, and A. H. Young, Seaboard Air Line.

A minority report, signed by M. J. Collins, Atchison, Topeka & Santa Fe, stated in effect that while there was much in the committee's report that would be of value to roads which had not already developed their own specifications and methods, he did not believe that the Atchison, Topeka & Santa Fe would be benefited by changing from its present specifications and that he could not, therefore, concur in the report as a whole.

*Abstract of a report presented at the meeting of the Purchases and Stores Section, American Railway Association, at Chicago, June 9, 10 and 11, 1921.

The Grain Rate Hearings Are Concluded

Final Argument Before I. C. C.—Relation of Rates and Wages Receives Much Attention

WASHINGTON, D. C.

HEARINGS before Commissioner Lewis of the Interstate Commerce Commission on the application of the Western state commissions for a general reduction in the rates on grain, grain products and hay in Western territory were concluded on September 1 and oral arguments were made on September 2 and 3. A number of the other commissioners sat during the hearing of testimony and the argument was held before the full commission. Arguments for the complainants were made by J. E. Benton, solicitor for the National Association of Railway and Utilities Commissioners; Clifford Thorne, representing the American Farm Bureau Federation, and C. M. Reed, chairman of the Kansas Public Utilities Commission, while the railroads were represented by R. H. Widdicombe of the Chicago & North Western and J. N. Davis of the Chicago, Milwaukee & St. Paul.

J. E. Benton Speaks for Railway and Utilities Commissioners

Mr. Benton argued that the rates on grain as made by the railroads had always been disproportionate to the rates on other commodities and that the relationship of grain rates to other rates has not been greatly changed. This disproportion has been greatly increased, he said, by the increase in the rates on grain at the same time that the farmer's costs have been greatly increased and his prices have fallen. The farmers receive only a small return for their labor and no return on their land, while the railroads ought to encourage the development of agriculture.

Mr. Benton also contended that the commission is free to make reasonable rates in spite of Section 15-a of the Transportation Act, which, he said, does not require a particular percentage of return under all circumstances and at all times because that is impossible. The law merely requires the commission to aim at that percentage "as nearly as may be within the bounds of reason." He thought the reduction in rates would operate as a conservation of revenues rather than tend to reduce them, but in any event it is the commission's duty to reduce them if unreasonable. The railways have been allowed in the past to earn hundreds of millions of surplus to tide them over such periods of depression.

Two factors entering into the reasonableness of the rates, Mr. Benton said, have changed. The value of the product has been cut in two and consequently one element in the cost to the carriers, the risk of loss and damage claims, has also been reduced. Mr. Benton devoted some time to his argument that the commission is not bound by the action of the Railroad Labor Board, saying that it is its duty to fix reasonable rates regardless of whether wages may be unreasonably high. Neither board, he said, can be bound by the action of the other, although each must give due weight to the findings of the other.

Commissioners Potter and Daniels asked if the commission is not entitled to consider the expenses of operation in fixing rates. Mr. Benton said the commission should not be bound by anything that shocks its sense of justice and neither board should consider the findings of the other as necessarily final, although the findings of either board would only be persuasive. If an order of the commission should require the carriers to make a new request for wage reduction, they would have an opportunity to make such application in view of the new conditions, and if the commission proceeds on the theory that the Labor Board can make proper orders it can decide rate cases properly. He admitted that if both parties proceeded independently the result might be a miscarriage of justice, but said that it was not to be presumed that they would act in that way. The legal presumption is that a miscarriage of justice will not occur, but that the decision of the two boards will be consistent. Therefore, the commission must form its own judgment as to whether the wages are proper in deciding what are reasonable rates.

Mr. Benton said that shippers were barred from appearing before the Labor Board, which must form its own conclusion as to the amount the carriers should receive from the shippers, whereas the commission has to decide the amount the shippers must pay the carriers and should form its own judgment as to what wages are proper. The carriers, he said, have been subjected by the law to this double standard and the event must prove whether the machinery created by law will work properly.

Commissioner Daniels asked whether the commission was bound by the effect on wages of the Adamson law. Mr. Benton replied in the affirmative on the ground that the commission is bound by the act of Congress, but not by that of a co-ordinate board. Commissioner Potter asked if the commission had a right to reduce rates on the basis of its own conclusion that wages are too high, without hearing the side of labor. To this Mr. Benton replied in the affirmative.

Clifford Thorne Represents the Farmers

Clifford Thorne said that after each war there has been a substantial decline in prices, which each industry naturally resists. In the past year there has been an unusually precipitous decline in prices, but the agricultural industry was the weakest in resisting declines and its prices have been reduced to pre-war levels, while the railroads have been the strongest in resisting such declines and their freight rates are higher than ever before. The result has been the creation of a panic condition in the agricultural industry, the bulk of which is on the verge of bankruptcy. It is up to the industry, he said, to get its costs down and he did not claim that transportation was the only cost to be considered, but said that it is one of the most important and one which is properly to be presented to the commission.

Mr. Thorne said that the railroads take the position that no reduction in rates can be made without a reduction in wages and that the general economic situation is not an issue to be decided by the commission, but the ability of the shippers to pay is not among the things named in the law which the Labor Board is to consider in fixing wages. He asked whether the result was to be that the government should shield one industry from a development which is being demanded of every other line of business. Mr. Thorne also argued that the 5½ per cent provision of the law is qualified by a proviso giving the commission latitude to prescribe reasonable rates in particular cases.

In conclusion, Mr. Thorne said he wished to submit a proposition to labor and a question to the railroads, in the hope that it might point to a solution. "We are confronted with a dilemma," he said, "because the conditions in the agricultural industry are intolerable and yet the railroads claim they cannot consent to any reduction in rates without a reduction in wages. On the other hand, railroad labor is thoroughly opposed to any reduction in wages." He be-

lieved that railroad labor might probably oppose any further decrease in wages that would go to the railroad corporations, but he would like to ask what would be its attitude if assured that the entire wage decrease would accrue to the farmer, and he asked, whether if railroad labor should consent to a reduction in wages for the specific purpose of reducing rates on grain, the railroads would consent to the reduction. He pointed out that a 5 per cent reduction in wages on the Western roads would amount approximately to the estimated amount of a 25 per cent reduction in the grain rates, or about $63,000,000.

In reply to questions by the commissioners, Mr. Thorne said that for the purpose of this proceeding he believed the inquiry should be confined to grain in the Western districts, but if it appears acceptable it could well be enlarged to include livestock and cover the nation. A 7½ per cent reduction in wages, he said, would permit a 25 per cent reduction in the rates on these basic food commodities.

Glenn E. Plumb, who was sitting in the audience, was observed to smile slightly as Mr. Thorne asked his question, but the railroad counsel made no reference to it in their arguments, which followed those of Mr. Thorne. In his closing argument Mr. Thorne returned to the subject, saying that the failure of the railroad counsel to reply to his question laid the foundation for further argument on his part. Asked whether labor had made any reply, Mr. Thorne said he had submitted his proposition to a representative of the labor organizations, who had promised to submit it to his associates. He also said that during the noon hour a vice-president of a prominent Western road had said he would agree to it. Mr. Thorne then made the point that the carriers refrained from answering his question, although it would not affect their net earnings, and added that labor has also refrained from answering it, but that it has really had no opportunity to do so. Commissioner McChord asked why Mr. Thorne criticized the carriers for not answering a mere suggestion on his part when it was hardly to be expected that their counsel would be in a position to answer it, and Commissioner Aitchison asked if they were not there for the purpose of meeting the particular issues in the case.

The Railroad's Argument

R. H. Widdicombe, in the opening argument for the railroads, said that the difficulty of the producers lies in the fall in the price of grain. There was no complaint, he said, of the grain rates while the farmer was getting what he thought his wheat was worth. The evidence in this case, he said, shows that a reduction in the rates will not increase the movement of the traffic and that the effect on the acreage to be planted next year is purely speculative. The acreage in past years has fluctuated at times when rates were stationary, because it was governed by supply and demand. The reason for the low price of wheat is the lessened demand for it in Europe. Mr. Widdicombe said that what the farmer needs most right now is to be let alone. If he is, he said, he will come out all right. Commissioner Aitchison asked who is bothering the farmer now. Mr. Widdicombe said he meant that the papers the farmers read are overflowing with statements that rates are too high and should be reduced, and that the farmer has been led by such reasoning to believe that a reduction in freight rates would be a remedy for his troubles.

To reduce freight rates on grain, grain products and hay without a reduction in operating expenses would be "disastrous" to the railroads of the United States in view of their present financial condition and would throw "many if not a majority of the western carriers into bankruptcy," while no substantial relief would be afforded the farmers. J. N. Davis, assistant general solicitor of the Chicago, Milwaukee & St. Paul, told the commission. Mr. Davis said that if the question of rates is left to traffic officials the problems confronting the farmer will shortly be solved. Mr. Davis said in part:

"The evidence of the railroads shows that at the present time the rate of return to western carriers on freight is but 2.54 per cent, and on passenger 3.43 per cent, or 2.78 per cent total. This per cent is regardless of any question with reference to deferred maintenance or consideration of any saving in operating expenses by the recent wage reduction by the Labor Board. If consideration is given to deferred maintenance and the reduction of operating costs by reason of the Labor Board's decision, the percentage on investment would be 1.15. If consideration is not given to deferred maintenance and only consideration is given to the amount that would be saved in operating expenses by reason of the wage reduction, this percentage would be 3.5.

"Without consideration of deferred maintenance, there was a net for all roads operating in the western district under consideration of 42 million, and if consideration was given to the maintenance that had been deferred and not performed, this 42 million would be wiped out completely.

"The operating ratio for the lines in the western district for the year 1921 was 95.04, which shows conclusively an unhealthy condition, financially speaking of the roads here under consideration.

"These figures conclusively prove, we believe, that there can be no general reduction in the rates. And we believe that there is no one that will contend that under the present conditions, under which the railroads operate, there could be a general reduction in rates.

"There is no evidence to prove that the rates on these commodities are unreasonable, but the carriers have shown that the rates are not unreasonably high.

"Witnesses have also shown that the benefit to the farmer would run from $8 to $56 per farmer per annum. No one will contend that this is a substantial aid to the farmer in his present condition, but a 25 per cent reduction in those rates would mean an annual loss in revenues of over $63,000,000 to the carriers in the western district alone and would cut their annual net return to 1.42 per cent in their tentative valuation as fixed by the Interstate Commerce Commission. Not only would this reduction be disastrous to the roads as a whole, but it would operate to put many if not a majority of the carriers in the western district into the hands of receivers.

"It is contended that a bushel of grain today will not purchase as much transportation as it did in former years, especially prior to the war. This is obvious because of the decline in the price of grain and the increase in freight rates. But, what commodity is not in relatively the same situation as is grain. If what the complainants contend is a justification for a reduction in the rates on grain and grain products, the same would hold equally true in most any other commodity moving in volume.

"They evidently overlook the fact that the railroad dollar does not go as far now as it did prior to the war. Also evidently they overlook the fact that during practically the entire war period their dollar went materially further than did the railroad dollar.

"There are other seats of trouble confronting the farmer than freight rates, that if properly adjusted in relation to the farmers' condition at this time would give some relief.

"We feel that we are not called upon to point out that there rests no power with this commission to reduce rates to enhance the profits of shippers if such rates are not shown to be unreasonable. This of course is the law. The Transportation Act does not delegate such power to the commission, and we know of no case wherein the commission has decided that it would so make rates. The carriers' revenues, as is shown by the evidence in this case, are now inadequate,

and what revenues the carriers receive should not now be diverted to assist an industry.

"The question has been propounded by opposing counsel as to whether the railroads should not forego the 5½ per cent contemplated by the Transportation Act, and give a helping hand to the industry. It is quite obvious that the railroads should not.

"The transportation system not only has its rates regulated, but a major portion of its operating expenses regulated, by governmental agencies, and in no case under the present law can the transportation company earn for itself a greater return than 5½ per cent. Regardless of whether it be a fat year or a lean year this 5½ per cent applies.

"With the farmer no such regulations exist. He can often recoup and offset that which he has lost in the lean year by what he may make in the fat year.

"For this reason alone we believe that the transportation system should not be asked to forego its just earnings to lend aid and help to any industry, whether it be agriculture or otherwise.

"The carriers are not unmindful of the conditions that now exist in the agricultural industry and the traffic manager is wide-awake to the situation, and is not only capable of dealing with the situation as it exists, but will see that the interest of his company as well as the interest of those patrons of his road are not neglected.

"One of the disturbing elements in this case is one that is wholly beyond the railroads' control. It is a fact that cannot be disputed that the freight rate must necessarily have a direct relationship with the operating expenses, and unless the operating expenses can be curtailed or reduced there is no way that we know of by which rates can be reduced. And when operating expenses are considered it at once is shown that the major portion of the operating expenses of any transportation company is wages.

"This operating expense is by Congress delegated to the Labor Board. At the same time Congress has delegated the regulation of the rates that the transportation companies should receive for the service performed to the Interstate Commerce Commission. We thus have the rates that we are to receive regulated by one governmental body, while the major portion of the operating expense, namely wages, is regulated by another and different governmental body. And it seems to be obvious that a reduction in the rates cannot possibly be made without a reduction in the operating expense."

Pennsylvania Officer Outlines New Labor Policy

Elisha Lee, Vice-President, Sketches the Gist of the Recent Controversy with the Wage Board

THE PENNSYLVANIA'S VIEW of the authority of the Railroad Labor Board to rule as it has in the recent controversy between that carrier and its shop and clerical forces, was clearly outlined by Elisha Lee, vice-president of the Pennsylvania, in a recent address before the Delaware Bankers' Association at Rehoboth, Del.

Mr. Lee explained in detail the carrier's plan for the peaceful and friendly settlement of labor differences by conferences between the management and elected representatives of the employees. He predicted success for it if it were not blocked by the interference of outside agencies, and said it had the endorsement and support of a great majority of the company's employees.

Mr. Lee criticized the Railroad Labor Board for intervening and declaring void the recent elections held under the plan. He dwelt particularly upon the feature of the board's order directing the carrier to hold new elections and submit to the employees the choice of labor organizations, instead of co-workers only, to represent them in conferences with the management.

In asserting the company's right to insist upon dealing directly with its own employees, Mr. Lee stated that the Pennsylvania had been advised by counsel that the Labor Board had altogether exceeded its authority in denying that right.

Discussing further the Pennsylvania's controversy with the Labor Board, Mr. Lee said:

"The Labor Board's order, in all likelihood, would compel us to conduct our conferences with strangers—with labor union general officers who were not our employees and who might not even be railroad men. It would defeat the very fundamental purpose of employee representation which is based upon the principle of face-to-face discussion between management and men.

"We do not think we can successfully settle the employment questions of the Pennsylvania Railroad with strangers. We do believe that we can adjust them with our own employees, if we are permitted to go ahead, free from gratuitous and unwarranted interference. We are perfectly willing to leave it to public opinion whether our view or that of the Labor Board is right.

"Our differences with the Labor Board arise out of the fact that while Congress plainly created it as a board of mediation to act in disputes which railroad managers and railroad employees were unable to settle between themselves, the board has gone far beyond that scope and assumed very largely the role of an administrative or managerial body with respect to the labor affairs of the railroads. This, we contend, under the Transportation Act, it has no right to do, and that is the gist of our differences with the board.

"We are not fighting the right of our employees to organize, nor are we trying to destroy the existing unions, as has often been falsely represented; neither is the question of collective bargaining in any way at stake. All we are insisting upon is the right to meet with our own employees and talk over our mutual troubles with them, and we do not think that such a right can fairly be construed as an assault upon unionism or a denial of the right of collective bargaining. In fact, it is a direct affirmation of the right of collective bargaining, as we specifically request our employees to get together and elect their representatives to bargain collectively with us.

Collective Bargaining and Collective Coercion

"We do insist, however, that there is a very important difference between collective bargaining and collective coercion. In this connection I wish to direct attention to the practice, by certain labor organizations, of three forms of coercion which, we believe, public opinion will not support and will ultimately compel those organizations to repudiate if they are to survive. I refer to: (1) restriction of output; (2) the closed shop; and, (3) the sympathetic strike.

"It is no secret that in the past the Pennsylvania Railroad, while maintaining no unfriendly feeling toward the four train service brotherhoods and certain other independent organizations of railroad workers, always refused to have any official relations with organizations embraced in the American Federation of Labor. Nor is it any secret that we regarded with

the greatest disfavor those policies of the Railroad Administration, during federal control, which resulted, for the first time, in introducing those organizations among our employees. Our objection to the federation has been due simply to the fact that it stands for the three coercive practices to which I have alluded and which we hold to be unjustifiable.

"The fight which we on the Pennsylvania Railroad are carrying on today is largely a fight against domination and virtual management of our employee relationships by the American Federation of Labor. It is not a fight against labor unionism, but only against labor union autocracy.

"We want to establish a truly democratic system of employee representation on the Pennsylvania Railroad, one in which the power and authority of the representatives sent to negotiate with us proceeds from the bottom up and is not imposed from the top down.

"We want to know that they really have been chosen by the workers from their own number, that they have the authority of the workers to speak and negotiate for them, and that when they give us an answer on any question submitted for their consideration, it is the answer and judgment of our own employees and not the dictum of some international labor union president who is not one of our employees, has no personal familiarity with our problems and may not even be a railroad man at all.

"Our labor policies and purposes are an open book. We have nothing to conceal. We welcome inquiry and scrutiny. We think we are engaged in a constructive work promising important results to the whole country, and we gladly submit to public judgment the sincerity and soundness of our plans. In turn we ask public support in the effort to secure for these plans a fair and adequate trial."

Committees Representing 120,000 Employees Established

In a recent circular the Pennsylvania announced that committees, consisting of equal representation of the employees and of the management, have now been established for the settlement of all controversial questions affecting approximately 120,000 employees.

The groups included in the new arrangement are: (1) Train and engine service; (2) maintenance of way and structures; (3) signal department; (4) mechanics' helpers and apprentices, maintenance of equipment and telegraph and telephone, eastern region; (5) clerical forces, eastern region; (6) miscellaneous station forces, eastern region.

In describing the manner in which these committees will function, the circular said in part: "For each of the first three groups a System Reviewing Committee, constituting a court of review upon all questions that may arise between the management and the employees affected, is now in effect. For each of the three other groups a Regional Reviewing Committee has been established.

"The questions to be taken up by these committees include grievances, rules and working conditions, and the administration of discipline. The votes of all members, whether representatives of the management or of the employees, are of equal power. Not less than two-thirds vote is necessary to reach a decision upon any question presented.

"In all matters except individual discipline cases, the full committee will vote and its decisions will constitute precedents which will be binding equally upon both sides with respect to similar existing or future cases. In discipline cases, which involve a personal element, the representatives of the management and the representatives of the employee directly interested in the case merely act as counsel for the presentation of their respective claims and do not vote on the case.

"A method of appeal to the division superintendent, general superintendent and general manager is provided so that all cases which cannot be settled on the division may receive expeditious attention by the Reviewing Committee. Regular meeting dates are fixed for the division superintendents, the general superintendents and the general managers, to meet representatives of the employees under their jurisdiction, and appeals may be taken in this order, the employees participating in every step in decisions affecting their interest.

"The formation of these committees carries out the policy announced on May 20, 1921, of giving all employees an opportunity to have a voice in the management in matters affecting their welfare. Following this announcement elections were held throughout the system to determine the employees' choice of representation to formulate new rules and working conditions to take the place of the National Agreements.

"It was announced at that time that it was the hope of the management that these employee representatives would form the nucleus of committees which should frequently confer with the management on all matters concerning the employees. Accordingly, as soon as the new rules were agreed upon, the employee representatives and the management held a series of conferences which resulted in the formation of these committees.

Freight Car Loading

WASHINGTON, D. C.

AN INCREASE of 13,273 in the number of cars loaded with revenue freight during the week ended August 27, compared with the previous week, is shown by reports received by the Car Service Division of the American Railway Association. The total for the week was 829,709 cars. This is the largest week's loading since December 11, 1920, but as compared with the corresponding week of 1920 it shows a loss of 171,599 cars.

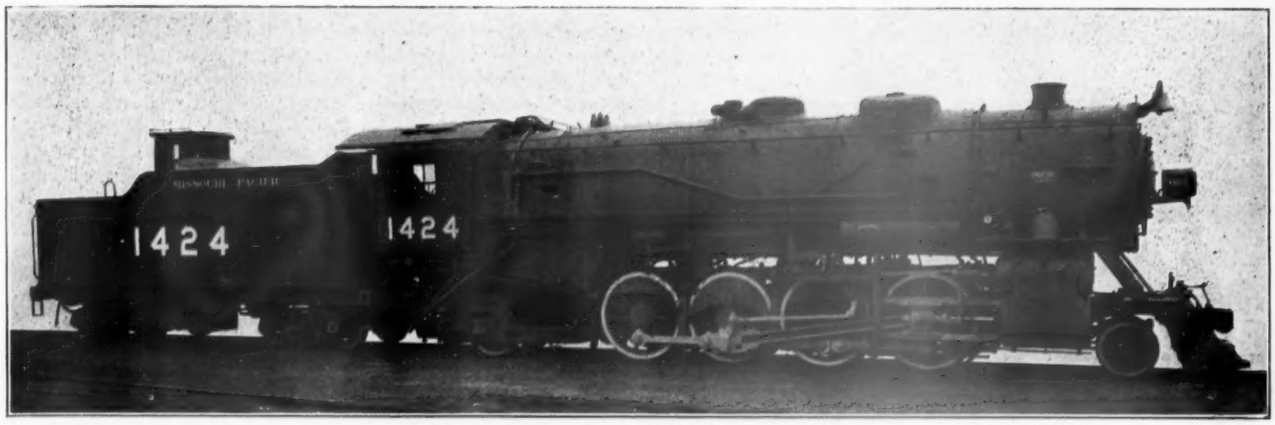
The principal increases as compared with the week before were in the loading of merchandise and miscellaneous freight and in coal. The total number of cars loaded with merchandise and miscellaneous freight was 499,421, an increase of nearly 8,000 as compared with the week of August 20, but 35,000 less than for the corresponding week of last year.

Loading of grain and grain products was 59,505, a decrease as compared with the week before of 370, but 13,000 cars more than for the same week in 1920. The loading of live stock amounted to 28,070 cars or a decrease of 1,040 under the preceding week and slightly less than for the corresponding week of 1920.

Coal loading amounted to 161,612, an increase of 7,472 as compared with the week before, but 50,000 cars less than for the corresponding week of 1920. The loading of forest products was 46,460, an increase of 1,877 over the week before, but about 1,000 cars less than the loading for the corresponding week of 1920. The ore loading was 30,035, a decrease as compared with the previous week of 2,355, while the loading of coke was 4,606 cars, an increase of 170.

Compared by districts, there were increases as compared with the week before in all except the Pocahontas and Northwestern districts, but in all districts the loading was below that for the corresponding week of 1920.

THE LONDON & BIRMINGHAM RAILWAY, now a part of the London & North Western, was one of the pioneer railways of the world and the story of its inception and construction—1830-38—is the subject of a sketch of absorbing interest in the Scientific American Monthly for August. It is by Herbert T. Walker, whose historical articles are always accurate and entertaining. One of the terminals, that at Kilsby, cost three times what the engineers had estimated, and numerous other construction problems were as baffling as this; but the fact that the locomotive, in a few short years, increased the speed of passenger travel by two or three hundred per cent sustained the enthusiasts; and the conservatives, who declared that railroads would destroy society, were silenced.



Mikado Type Locomotive Equipped with Booster

New Locomotives for the Missouri Pacific

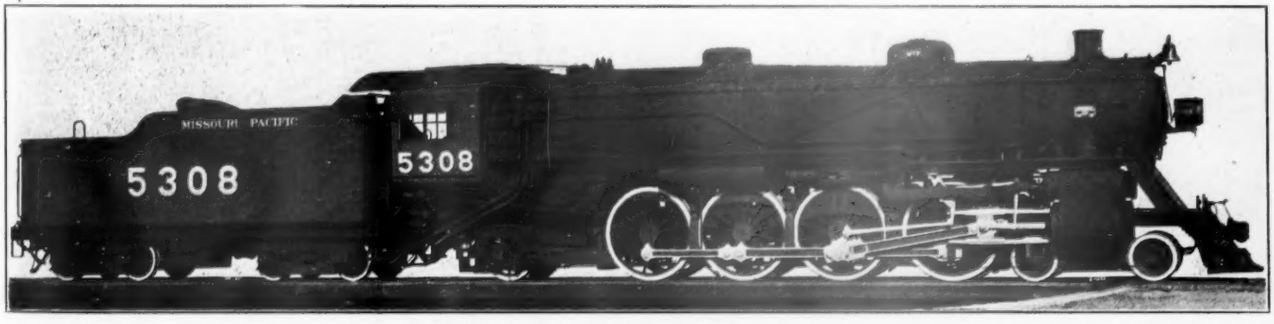
Harter Circulating Plates Applied to Improve Boiler Capacity— Booster Increases Tonnage 13 Per Cent

THE MISSOURI PACIFIC has recently added to its equipment 50 locomotives built by the American Locomotive Company. These include 15 six-wheel switchers (0-6-0 type), 25 Mikado (2-8-2 type), 5 Pacific (4-6-2 type) and 5 Mountain (4-8-2 type) locomotives, none of which types are new on this road. The six-wheel switchers are of the same design as those received about a year ago; the Pacific type engines are practically duplicates of those previously built, while the Mikado and Mountain types are of entirely new design.

Mikado Type

The Mikado locomotives previously used were of the government light, or U. S. R. A. 2-8-2-A type allocated to the road during the war. These locomotives are of 54,600 lb. tractive effort, have 26 in. by 30 in. cylinders, the total weight being 290,800 lb., with 221,500 lb. on drivers and 63 in. wheels. The new locomotives have 10 per cent greater tractive effort and an equivalent increase in weight and are handling 10 per cent greater tonnage. Among the special features are floating bushings for the middle connection bearings which are giving much better satisfaction on locomotives of this size than the stationary bushings previously used, alco power reverse gear, Duplex type D stokers, Franklin grate shakers and adjustable driving box wedges, Chicago flange lubricators and Jemco unit spark arresters which are said to be an improvement over the Master Mechanics' design in ease of application, convenience in maintenance and reduction of fire hazards.

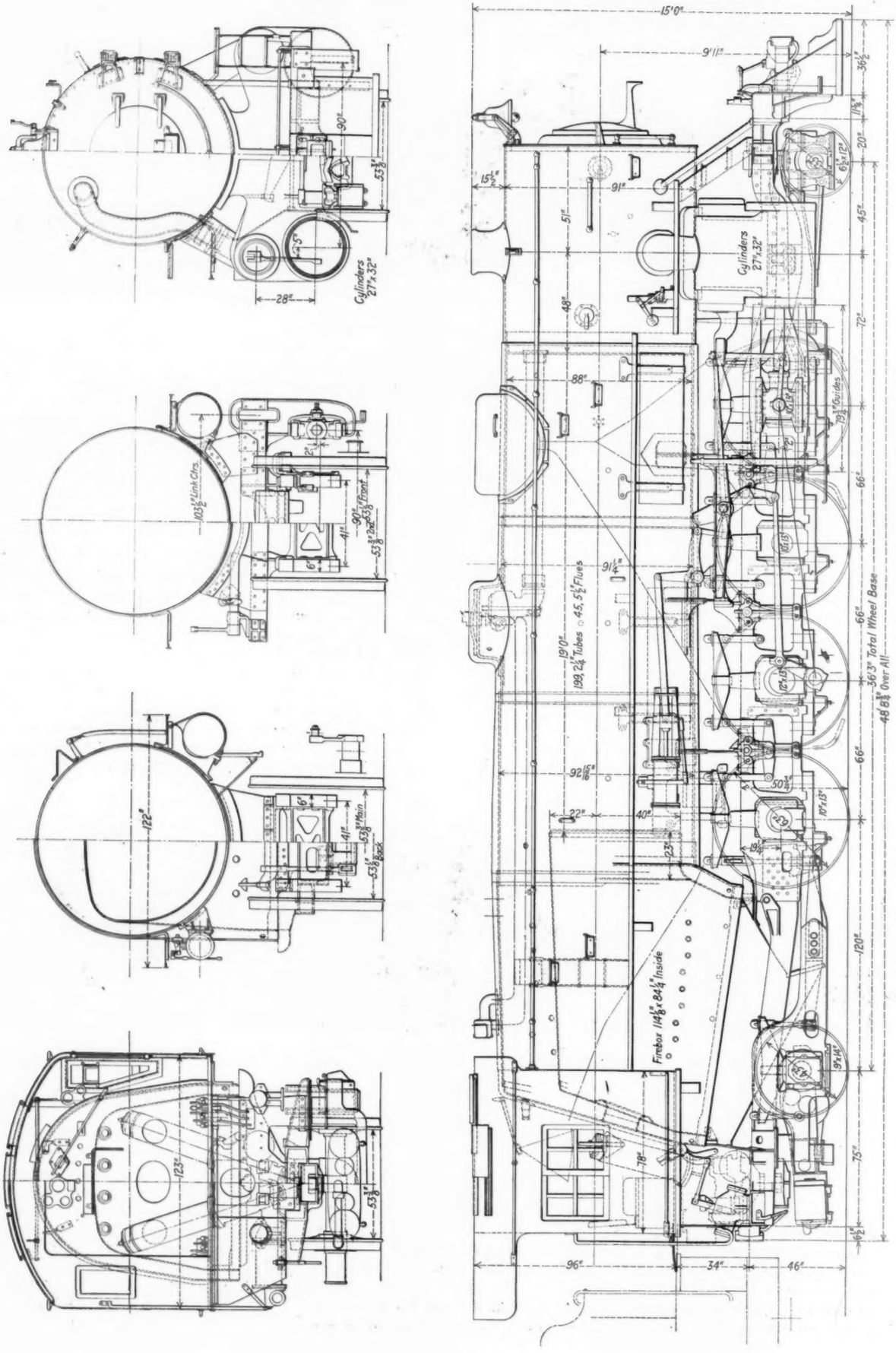
The boilers of the Mikado type as well as the other locomotives are equipped with the Harter circulating plate which, it is estimated, has added 10 per cent to their capacity. This device consists essentially of a horizontal plate, slightly below the center line, extending entirely across the boiler from a point just behind the feedwater inlet to within about six inches of the back tube sheet. Outlets for steam are provided by pipes placed at intervals on either side which lead from below the plate to the steam space at the top of the boiler barrel. On the Mikado locomotives the boiler horsepower is 93.9 per cent of the cylinder horsepower without allowance for the circulating plate and on the Mountain type the rated boiler power is even less. All of the locomotives have, however, proved to be free steamers.



An Efficient Mountain Type Locomotive of Medium Weight

Delta trailing trucks, equalized with the drivers and equipped with brakes, are used on all road engines. Of the 25 Mikado locomotives, two are equipped with boosters and provision is made for their future application to the other engines. In actual service it has been found that the locomotives equipped with boosters can handle 13½ per cent more tonnage than the same design without the booster. The booster increases the tractive effort 10,000 lb. and adds 3,500 lb. more weight on the trailing truck, 4,500 lb. more on the drivers and 1,000 lb. less on the front truck.

The ruling grade on the line where the boosters are used



Elevation and Sections of New Mikado Type Locomotives for the Missouri Pacific

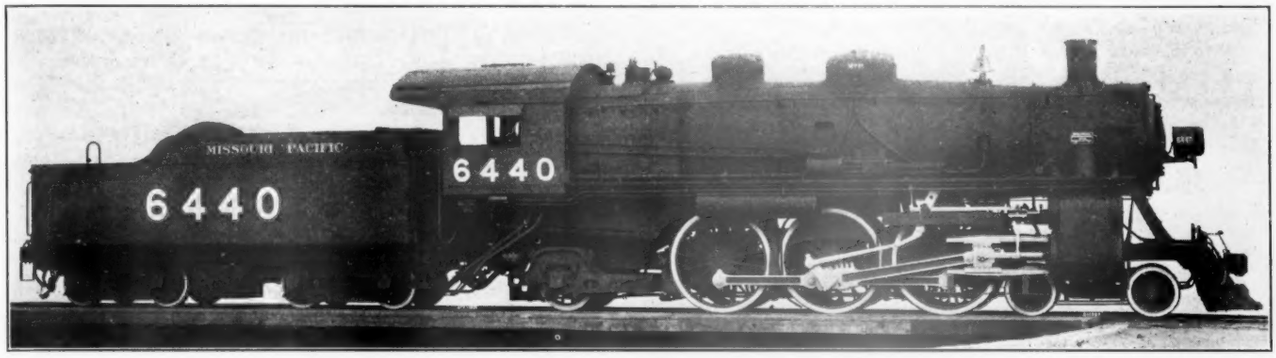
is five miles long so that the demand on the boiler for steam to supply the boosters as well as the locomotive cylinders is severe and prolonged and any lack of capacity would be developed quickly. In actual tests the locomotives have handled full tonnage over the ruling grade at a speed of approximately 10 m.p.h. With the reverse lever in the corner, the booster in operation, the throttle wide open and the injector on, full boiler pressure was maintained.

Mountain Type

The Missouri Pacific has been using for some time a number of U. S. R. A. 4-8-2-A light Mountain type locomotives which have a tractive effort of 53,900 lb., 27 in. by 30 in. cylinders, a total weight of 327,000 lb., 224,500 lb. on drivers and 69 in. wheels. The new locomotives were designed for the same service and to correct some of the troubles which have been experienced with the older ones. In attempting to make pronounced changes in the design, an interesting problem was encountered owing to the fact that the condition of bridges and structures on the section of the road where the locomotives were to be used necessitated limiting the weight on the drivers to 226,000 lb.

The size of the driving wheels was increased to 73 in. to fit them better for the speeds at which the passenger trains are scheduled and lateral motion driving boxes were applied on the front pair of drivers to lessen the rigid wheel-base and eliminate the trouble with hot bearings. These modifications naturally necessitated a longer boiler, which would tend to increase the weight beyond that allowable. The previous locomotives had a rated boiler horsepower capacity of 97.5 per cent of the cylinder horsepower. In order to keep the weight within the maximum allowable, it was decided to reduce the boiler size so that its rated horsepower was only 85.3 per cent of the cylinder horsepower. This it was thought could be done safely by using Harter circulating plates to increase the boiler capacity.

The new Mountain type locomotives are being run in a pool with the older locomotives and consequently both are handling the same trains on the same division. Both designs have the same size cylinders. Despite the smaller boiler,



Pacific Type Locomotive of 40,000 lb. Tractive Effort

DIMENSIONS AND RATIOS OF THE MISSOURI PACIFIC'S NEW LOCOMOTIVES

	0-6-0 Switcher	2-8-2 Mikado†	4-6-2 Pacific	4-8-2 Mountain
Tractive effort (85 per cent boiler pressure)	39,100 lb.	59,800 lb.	39,500 lb.	53,500 lb.
Cylinders, diameter and stroke	21 in. by 28 in.	27 in. by 32 in.	26 in. by 26 in.	27 in. by 30 in.
Valves	10 in. piston	14 in. piston	14 in. piston	14 in. piston
Weight in working order:				
On drivers	163,000 lb.	233,000 lb.	166,500 lb.	226,000 lb.
On front truck	.....	30,500 lb.	49,000 lb.	52,500 lb.
On trailing truck	.....	56,500 lb.	52,000 lb.	56,500 lb.
Total engine	163,000 lb	320,000 lb.	267,500 lb.	335,000 lb.
Total engine and tender	287,800 lb.	510,000 lb.	435,700 lb.	527,800 lb.
Wheel base, driving	11 ft. 6 in.	16 ft. 6 in.	13 ft. 0 in.	19 ft. 7 in.
Total engine	11 ft. 6 in.	36 ft. 3 in.	33 ft. 7 in.	41 ft. 4 in.
Total engine and tender	43 ft. 10½ in.	71 ft. 1½ in.	67 ft. ¾ in.	77 ft. 2 in.
Wheels and journals:				
Driving, diameter over tires	51 in.	63 in.	73 in.	73 in.
Driving journals, main	9½ in. by 12 in.	12 in. by 13 in.	10½ in. by 12 in.	12 in. by 13 in.
Driving journals, others	9 in. by 12 in.	10 in. by 13 in.	10 in. by 12 in.	10 in. by 13 in. and 10 in. by 19 in.
Boiler, style	Ext. wagon top	Straight top	Ext. wagon top	Conical conn.
Diameter	64½ in.	88 in.	72⅜ in.	76⅝ in.
Steam pressure	190 lb.	190 lb.	193 lb.	210 lb.
Firebox, length and width	78 in. by 70¼ in.	114⅛ in. by 84½ in.	108 in. by 66 in.	114⅛ in. by 84¼ in.
Grate area	38 sq. ft.	67 sq. ft.	49.5 sq. ft.	67 sq. ft.
Tubes, number and diameter	158—2 in.	199—2¼ in.	207—2 in.	182—2¼ in.
Flues, number and diameter	24—5½ in.	45—5½ in.	32—5⅜ in.	40—5½ in.
Tubes and flues, length	14 ft.	19 ft.	20 ft.	22 ft.
Heating surface, firebox	145 sq. ft.	263 sq. ft.	207 sq. ft.	300 sq. ft.
Heating surface, tubes and flues	1,629 sq. ft.	3,464 sq. ft.	3,076 sq. ft.	3,634 sq. ft.
Heating surface, total	1,774 sq. ft.	3,727 sq. ft.	2,283 sq. ft.	3,934 sq. ft.
Superheater surface	393 sq. ft.	1,051 sq. ft.	778 sq. ft.	1,084 sq. ft.
Equivalent heating surface*	2,363 sq. ft.	5,303 sq. ft.	4,450 sq. ft.	5,560 sq. ft.
Tender:				
Water capacity	6,000 gal.	10,000 gal.	8,000 gal.	10,000 gal.
Coal capacity	10 tons	16 tons	14 tons	16 tons
Ratios:				
Weight on drivers ÷ tractive effort	4.3	3.9	4.2	4.2
Total weight ÷ tractive effort	4.3	5.3	6.8	6.3
Tractive effort ÷ equivalent heating surface	16.5	11.3	11.3	9.6
Tractive effort × diameter drivers ÷ equivalent heating surface	844	711	823	702
Equivalent heating surface ÷ grate area	62.3	79.2	89.9	83.0
Weight on drivers ÷ equivalent heating surface	68.9	43.9	37.4	40.6
Total weight ÷ equivalent heating surface	68.9	60.4	60.1	60.3
Firebox heating surface ÷ equivalent heating surface, per cent	6.1	5.0	4.6	5.4
Volume of cylinders, cubic feet	11.2	21.18	15.96	19.86
Equivalent heating surface ÷ volume cylinders	211	250	278	280
Grate area ÷ volume cylinders	3.4	3.2	3.1	3.4
Superheater surface ÷ evaporative surface, per cent	22.1	28.2	23.7	27.5

*Equivalent heating surface = total evaporative heating surface + 1.5 times the superheating surface. †Weights and ratios for those without booster

the new locomotives steam just as freely as the older ones, are running with ¾ in. larger exhaust nozzles, are making better fuel records and take the same train 30 miles further for water.

The locomotives are provided with floating bushings in the middle connections and the same attachments furnished on the Mikado type. Boosters were not applied but provision was made for their attachment in the future.

As has been stated, the Pacifics and switch engines are practically the same as previous designs but are provided with Harter circulating plates. The Pacific type locomotives are operating with exhaust nozzles from ½ in. to ¾ in. larger than was previously possible and are showing an improved fuel record and better performance in general.

A table showing the principal dimensions and ratios of the four types of locomotives is given for comparison with other designs.

Increasing Locomotive Mileage

By F. P. Roesch

THERE NECESSARILY must be a locomotive terminus at each end of a division, a place where power is turned back. It may be at the end of the line, or it may be an intermediate terminal, but in either case both terminals are not main terminals. The intermediate or minor terminal deserves more attention than is generally given to it, especially where winters are severe.

Standing locomotives earn no revenue. A locomotive requiring terminal attention during the winter months must be housed—repairs cannot be made outdoors; therefore any delay in housing means that much time lost. From this it follows that the track layout leading into the house, including cinder pits, coaling, sanding and watering facilities constitute the neck of the bottle, regardless of housing capacity.

On many railroads facilities insofar as minor terminals are concerned are woefully deficient. In the majority of cases not only is there insufficient house room, but the outside facilities have not kept pace with the growth of power. This means that when repairs are required the locomotive is often held twice as long as would have been the case with proper facilities.

Why make such strenuous efforts to save at one end only to lose time at the other? Furthermore, due to the conditions mentioned, many repairs, if made at all, are only done in a perfunctory manner, "just good enough to take the old mill home," thereby adding another burden to the already overtaxed main terminal.

This is not an argument to bring the minor terminal facilities up to those of the main terminal. On the contrary, the underlying thought is the abolition of the minor terminal entirely or as far as practical, considering the needs of the service.

Habit is a potent factor. Where enginemen report repairs, necessary or fancied, habit prompts them to report something every time they reach a terminal. Were the division twice as long, the locomotive would doubtless negotiate the remaining miles just as satisfactorily as it did the preceding distance, regardless of the real or fancied defect.

Longer Runs Possible With Modern Power

In the gradual evolution of the locomotive, the weaker or troublesome parts have been almost wholly eliminated so that the present day locomotive can be classed as a thoroughly reliable machine insofar as mechanical road failures are concerned, and where physical conditions of the service are similar, *i. e.*, character of the water, coal, permanent way, etc., there is no reason why the modern locomotive, either passenger or freight, should not successfully cover from 200 to 400 miles without attention other than that given by the enginemen, such as lubrication, etc.

A close study of the present practice of short runs indicates the following as the controlling factors:

The condition of the fire.

The condition of the water in the boiler.

The effect of long runs on journal temperature.

Assignment of power.

An analysis of the above indicates that where locomotives are hand-fired and especially where they are not equipped with power grate shakers or power-operated fire doors, the physical limitations of the fireman precludes the possibility of maintaining a clean fire with the average locomotive coal when the time on the road exceeds eight or ten hours. The consequence is low steam pressure toward the end of the runs with resultant loss of time, waste of fuel and frequently firebox leakage. Oil-burning locomotives that normally are worked to nearer their maximum capacity than coal-burning locomotives are being successfully operated over two or more divisions.

While there will always be more manual labor required from the fireman on a coal-burning locomotive, the application of stokers and power grate shakers so reduces this labor that the fire can be maintained in a practically perfect condition indefinitely without undue exertion on the part of the fireman. This in turn results in a maintained maximum steam pressure, a maintained speed and better boiler condition. From the above it is clear that the application of the labor saving devices mentioned will practically put the coal-burning locomotive in the oil-burning class.

Feed Water

On many railroads the character of the water on connecting divisions is radically different. In other words, they cannot safely be mixed. Where such conditions prevail there is, of course, no other remedy except correct water treatment. If the water on any division is bad, treatment is the logical thing, and where it prevents the operation of a locomotive over both divisions, water treatment becomes practically imperative.

Frequently, however, a difference in feed-water is an asset instead of a liability. Instances exist where the water on one division contains a solvent for the scale deposited on another division. In such cases, if the locomotives are operated over both divisions right from the beginning, i. e., after receiving new tubes, etc., the life of the tubes and firebox is extended, and failures due to leakage correspondingly reduced. It is clear that water conditions present no insurmountable difficulties.

Lubrication

In the past, when small drivers were in vogue, with their attendant high peripheral journal speed and oil lubrication, a locomotive capable of maintaining a fairly high speed for a distance of from 100 to 150 miles, would become heated at the end of this distance to such an extent as to make a further mileage somewhat uncertain unless opportunity were offered for cooling the journals. With modern grease lubrication, floating rod bearings, and radial valve gear, hot bearings can be almost wholly overcome, providing they receive proper attention before the locomotive is dispatched. Therefore, journal friction can also be cast aside as limiting continuous mileage possibilities.

Assignment of Power

There remains, therefore, only one other factor, viz., assigned locomotives. The assignment of power, or what is generally termed regular engines, has been a much mooted question among mechanical men since pooling of power was introduced. Where locomotives are kept on one division,

good arguments in favor of regular engines can be advanced; arguments that, backed by statistics, cannot be refuted. On roads which already have power pooled, a further pooling cannot prove objectionable and would appear logical by running the locomotives over two divisions at least, changing crews where necessary.

This would result in the following economies: The practical elimination of a number of minor terminals which have become much more expensive to operate since the re-classification of labor; increased mileage per locomotive during a given time, as the locomotives will be making mileage where previously they were standing in the roundhouse; economy in fuel owing to decreased fire knocking and rebuilding; decreased maintenance expense, especially as regards boiler maintenance; reduction in capital investment as a smaller number of locomotives will be required to move a given tonnage; last but not least, if trains are built up so that crews can be changed on the main line without cutting the locomotive from the train, an accelerated traffic will result with a marked reduction in intermediate switching.

However, in order to realize the full economies to be obtained by extending locomotive mileage, the locomotives must be designed with this end in view and must be equipped with the necessary labor saving devices.

Present Freight Rates Do Not Restrain Commerce

Comparison of Transportation Charges with Commodity Prices Shows Complaint Against Rates Unsound

By C. F. Balch
Assistant General Auditor, Chicago & North Western

THERE IS CONSIDERABLE discussion at this time of the effect of the present freight rates upon commerce in the United States. There are many angles from which this subject may be attacked, and much is to be said from the standpoint of the shippers as well as from the side of the carriers. My purpose at this time, however, is to call attention to the ultimate relation, as I understand it, of transportation to the goods transported. This may not be the sole governing factor, but it is certainly pertinent to a correct understanding of the subject.

To introduce my viewpoint let me quote from an address by J. Kruttschnitt, chairman of the board of the Southern Pacific, which he made in the autumn of 1919. Mr. Kruttschnitt at that time said in part:

> The cumulative effect of all steam railroad freight charges, which in their remotest ramifications could affect the values of commodities, for the year 1914, which marked the opening of the war, has been weighed, and the same has been done for 1919. As we seek to establish the comparative effect of freight charges on commodity prices in two years six years apart, the commission's methods used in computing tonnage and revenue statistics, and ours in establishing prices being the same in both periods, will not affect the soundness of our conclusions.

Average commodity value per ton of "freight originated"	$119.00	$56.00
Freight charges per ton originated	2.80	2.00
Percentage of charges to value	2.4%	3.6%
Increase in cost to consumer, 1919 over 1914	63.00	....
Increase in freight charges, per ton	.80	....
Relation of freight increase to cost increase	1.3%	....

In other words, only 80 cents out of 63 dollars, or 1.3 cents out of every dollar of increase in values of commodities in 1919 was caused by increased freight charges: the responsibility for the remaining $62.20, or 98.7 cents of every dollar, must be sought elsewhere; it was not caused by freight charges.

In order to present a different point of view from that given above, I will use the value of transportation as $56 and $119 as given by Mr. Kruttschnitt, and will take the value of $100 as standard for 1917, and $84 as a normal in 1921, giving the table shown in the next column.

The idea to be presented in this chart, taking the first illustration, is this: In the year 1914, the average revenue per ton per mile in the United States was 0.733 cents. The market value per ton of miscellaneous freight traffic is given as $56. At a distance of 25 miles, the freight charges at 0.733 cents would aggregate 18 cents per ton, and if that amount were paid for transportation and the produce sold at $56, the shipper would net $55.82. At 250 miles, which is the average haul, the shipper would pay $1.83 for transportation and net $54.17 per ton. When the illustration is carried out to a distance of 7,000 miles, the transportation charge would be $31.31, netting the shipper $4.69. Beyond this, of course, the produce sold would not pay the transportation charges.

In the year 1917, the average revenue per ton per mile in the United States was 0.715 cents. In the meantime, the average price of goods had increased, and is here shown at $100 per ton. The illustration shows that under these conditions, the produce could be shipped a distance of 13,000 miles, and after paying the transportation charge, would net the shipper $7.05. Similar calculations are shown for the year 1919, and for the conditions prevailing in December, 1920. The value of merchandise in December, 1920, is taken as 150 per cent of its pre-war value, assuming that this will be recognized as standard when economic conditions have reached a new normal in 1921. The rate per ton per mile is that published by the Interstate Commerce Commission. From a study of this chart, it will be seen that when the average of all prices has declined to a point where it is 150 per cent of the price prevailing in 1914, transportation over

TYPICAL ILLUSTRATION VALUE OF MISCELLANEOUS FREIGHT TRAFFIC AT VARYING DISTANCES FROM POINT OF PRODCTION

	1914		1917		1919		December, 1920	
Value per ton at market	$56		$100		$119		$84 estimated as 150% of 1914	
	Rate per ton per mile, 0.733 cent		Rate per ton per mile, 0.715 cent		Rate per ton per mile, 0.973 cent		Rate per ton per mile, 1.209 cents	
Miles distant	Price of transp'n	Net to shipper	Price of transp'n	Net to shipper	Price of transp'n	Net to shipper	Price of transp'n	Net to shipper
25	$0.18	$55.82	$0.18	$99.82	$0.24	$118.76	$0.30	$83.70
50	.37	55.50	.36	99.64	.49	118.51	.60	83.40
100	.73	55.27	.72	99.28	.97	118.03	1.21	82.79
150	1.10	54.90	1.07	98.93	1.46	117.54	1.81	82.19
200	1.47	54.53	1.43	98.57	1.95	117.05	2.42	81.58
250*	1.83	54.17	1.79	98.21	2.43	116.57	3.02	80.98
300	2.20	53.80	2.15	97.85	2.92	116.08	3.63	80.37
500	3.67	52.33	3.58	96.42	4.87	114.13	6.05	77.95
1,000	7.33	48.67	7.15	92.85	9.73	109.27	12.09	71.91
2,000	14.65	41.34	14.30	85.70	19.46	99.24	24.18	59.82
3,000	21.99	34.01	21.45	78.55	29.19	89 81	36.27	47.73
4,000	29.32	26.68	28.60	71.40	38.92	80.08	48.36	35.64
5,000	36.65	19.35	35.75	64.25	48.65	70.35	60.45	23.55
6.000	43.98	12.02	42.90	57.10	58.38	60.62	72.54	11.46
7,000	51.31	4.69	50.05	49.95	68.11	50.89	.....	.....
8,000	.....	.....	57.20	42.80	77.84	41.16	.....	.....
9,000	.....	.....	64.35	35.65	87.57	31.43	.....	.....
10,000	.....	.....	71.50	28.50	97.30	21.70	.....	.....
11.000	.....	.....	78.65	21.35	107.03	11.97	.....	.....
12,000	.....	.....	85.80	14.20	116.76	2.24	.....	.....
13,000	.....	.....	92.95	7.05	.....	.....	.....	.....

*Approximate average distance freight is hauled in U. S.
Accounting department
B. O-12, May 18, 1921

the average distance of 250 miles has very nearly the same relation to the value of the goods as the transportation charge had in 1914, and, therefore, according to my theory, the freight rates and charges prevailing in December, 1920, would not affect the commerce of the country to any more appreciable extent than did the transportation charges in 1914. In the meantime, during the year 1917, the transportation charge was slightly decreased, giving the shipper a large advantage as compared with 1914. In 1919, the freight rate was advanced over 25 per cent, and yet the shipper enjoyed a condition comparatively better than in 1914. In 1921, the shipper does, and will enjoy an advantage until such time as prices decline to a point where they will be 150 per cent of the value of 1914. Since we have not reached as yet the condition represented by the right hand column of the chart, there is, theoretically, no cause for the shipper to complain of high freight rates, or to declare that he is suffering from the transportation conditions which prevail.

Advantage on Side of Shipper

Discussing the results at the average point, we find that in 1914, the shipper would realize $54.17 per ton at the market. Assuming that the cost of production was $30 per ton, he would then net $24.17 per ton. Assuming that in December, 1920, the cost of production had increased to $45 per ton (150 per cent of 1914 costs), he would then net ton in December, 1920, the commodity would net him $29.98 per ton as compared with $24.17 per ton in 1914. This $35.98 per ton as compared with $24.17 in 1914. But if we suppose that the cost of production had increased to $60 per result, however, is not the result of the transportation charge, but of the economic conditions connected with production. In fact it is quite probable that much of the present difficulty can be traced to conditions other than transportation. The general public, however, finds that the easy way to seek relief from all of these conditions is by appealing for a reduction in transportation charges. There is, however, no justice in undertaking to adjust through a reduction in transportation charges, economic conditions resulting from causes other than those of transportation.

During the years 1917 and 1919, the shipper enjoyed a distinct advantage which, it is plain, he appropriated for himself. He maintained his prices regardless of the low transportation charges, and it is a natural inference after a contemplation of this chart, that the governing authorities might well have advanced the freight rates to a point where the transportation facilities of the United States would have been self-supporting by placing the burden upon the shipper, who received the benefit, rather than upon the general public. Inasmuch as the average of present prices is considerably above 150 per cent of those prevailing in 1914, the shipper is not now being adversely affected by what are termed the present high freight rates.

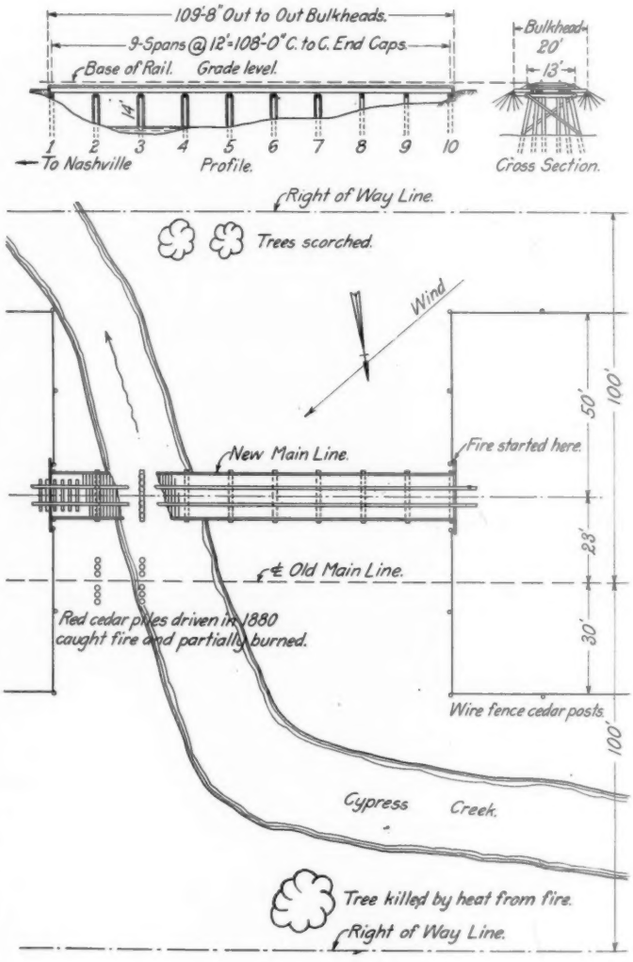
There are, of course, many instances where prices have changed in ways not represented by this chart, but for every instance of prices lower than those quoted in December, 1920, there is a corresponding circumstance where the prices are higher, and a close investigation from this point of view will disclose that some of the parties making the most noise are really those who are least hurt.

FRAUDULENT AGENTS, professing to be employment agents of road contractors, have been working among the unemployed in Minneapolis, Minn., soliciting labor for railroad work and collecting the railroad fare in advance from men whom they ostensibly employed. When the victims appeared at the railroad station for their transportation, they found neither the transportation nor the employment agent. Solicitors pretending to be obtaining advertising for railroad guide books have also been active in this city, defrauding many small advertisers.

N. C. & St. L. Creosoted Bridge Survives Fire

AN INCIDENT commanding widespread attention for its significance occurred on the afternoon of May 27 when a 108-ft. nine-span creosoted timber ballasted deck trestle on the Nashville, Chattanooga & St. Louis survived a fire which at the time was thought to have completely destroyed it. Starting at one end of the trestle and fanned by a high wind the fire spread over the structure rapidly and burned intensely for some time. Following the fire an examination revealed the fact that with the exception of the charring which the timbers suffered and the burning of a few braces to a degree which necessitated their renewal, the structure was little the worse for its experience.

The incident merits particular attention in view of the fact



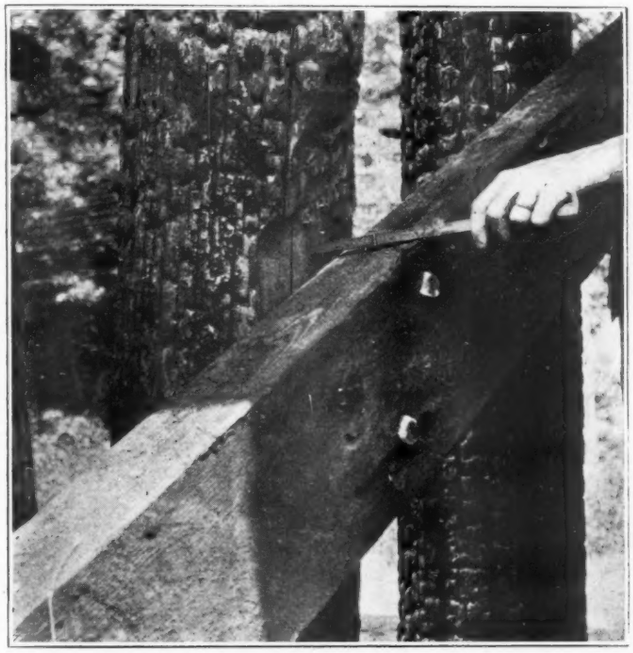
Location of the Bridge

that much opposition has been raised in recent years to the use of creosoted timber in trestles and that largely in the belief that creosoted structures are poor fire risks, it has become the established practice on a number of roads to build in reinforced concrete although the cost of this construction is about double that of creosoted timber construction. As a result of the fire it would appear that weaknesses attributed to creosoted timber in its relation to fire have been somewhat exaggerated. At any rate on the Nashville, Chattanooga & St. Louis, on which 35,845 ft. of creosoted trestle have been built since 1910, the incident is interpreted as a confirmation of the opinion to which the company has consistently held

that such structures do not constitute extraordinary fire hazards.

All indications pointed to the conclusion that the fire started at the west end of the structure on the south side from hot coals which had been dropped by a locomotive a short time before and had lodged between the mud sill of the abutment and a post of the right-of-way wing fence. The timber at that point once afire and a high northeast wind blowing, together with the film of creosote oil on the surface of the timber, soon had created a hot blaze.

That the fire burned intensely for a time was borne out by the statement of those who witnessed it and by evidences found after it had died out. Dense smoke formed by the burning oil was seen by farmers 10 miles distant. Leaves on trees about 60 ft. from the trestle on the south side were scorched although the wind was blowing in the opposite direction and the leaves on trees 100 ft. to the north of the trestle were completely killed. Untreated cedar piles standing on the old alinement about 25 ft. to the north were set on



The Piles Suffered Little Loss of Strength

fire and a bucket gang fighting the fire could not approach within 50 ft. until it had in large part died out.

The fire lasted about 2½ hours. During this time practically all parts of the trestle caught fire and all burned portions of the trestle were found charred to a depth of ½ to ¾ in. with the exception of some of the cross-bracing which suffered more severely.

It was plainly evident that the fire had smothered itself, the explanation for this being that as the creosote oil burned it left a residue which accumulated on the surface of the timber to a point where the oxygen necessary to continue the combustion could not reach the unburned wood. This was substantiated by setting on fire a pile of the chips cut from the face of the charred piles when fitting cross-sectional bracing to the bents, a fire which also showed that a sufficient quantity of oil still remained in the structure to preserve it from decay. Repairs cost only $75.

We are indebted for the information concerning this trestle to Hunter McDonald, chief engineer of the Nashville, Chattanooga & St. Louis, and to the reports of Carter L. Wilson, assistant engineer in charge of bridges, and J. H. Ryan, division engineer.

Ease of Operation Features New Coach Seat

ONE OF THE special features of a coach seat recently developed by the Scarritt Car Seat & Manufacturing Company, St. Louis, Mo., is freedom from jamming and ease of operation. This is secured by carrying the

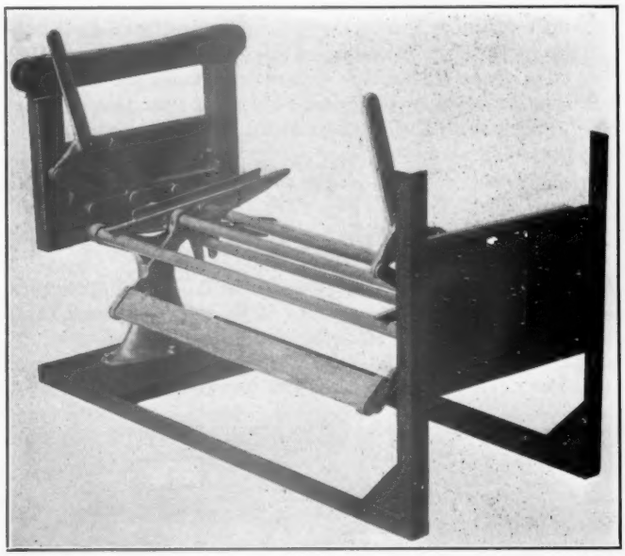


Fig. 1—View of Coach Seat Operating Mechanism

operating mechanism on four rollers, two on each side, operating in channels in the side plates, as shown in Fig. 1. The double automatic foot rest is designed to afford ample clearance for luggage beneath the seat, and, although it is

Fig. 2—Scarritt Coach Seat with Parts Assembled

mechanically operated, becomes inoperative when obstructed and allows the back to be reversed freely without injury to the seat mechanism or the obstructing baggage. The aisle arm is made of steel and can be enameled in any desired

color and fitted with a wooden arm rest to match the finish of the car interior.

The seat can be equipped with any type of back cushion with or without a headroll. Fig. 2 shows the new type of back cushion with the Scarritt invisible headroll designed to afford maximum comfort to the passengers. The plush is applied without stitching and therefore can be renewed at a nominal labor cost, the elimination of all gimp and seams making this a sanitary type of cushion. The seat cushion is of the full spring type with flexible edges and is designed to meet the most severe service conditions. The hand-stitched upper edge of the curled hair assures maximum life from the plush or other covering material. This seat was designed for first-class coaches and conforms to modern ideas of car equipment.

New Type of Car Stop

A NEW TYPE of car stop has recently been introduced which relies upon sliding friction to prevent cars from passing beyond the ends of stub tracks rather than upon the impact characteristic of the rigid bumping post. The device, called the Breyley bumper, consists of two

A Pair of Breyley Bumpers in Place

cast steel shoes, each of which has a long base capable of sliding on the rail (to which it is held by lugs engaging the rail head) and an upper surface shaped in such a manner that when in place on the rail a wheel striking the shoe mounts it and is prevented from overrunning it or rolling back. With the forward wheels of the moving car thus car-

Breyley Bumper Shown Holding the Car and Abutting the Stop Block

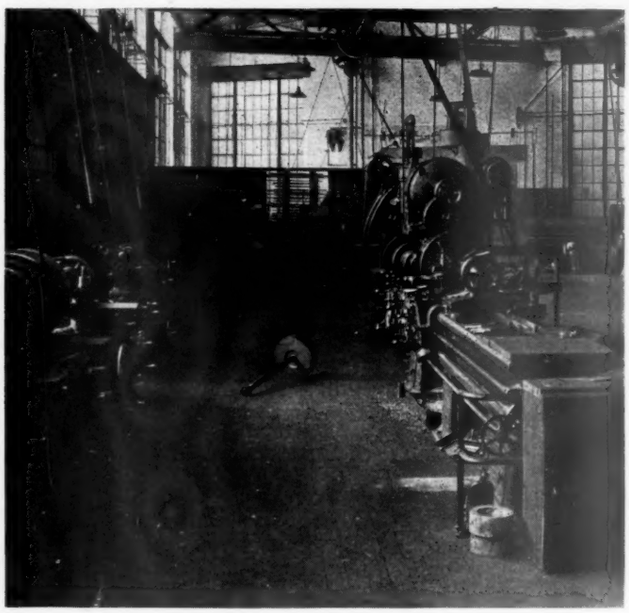
ried on the two shoes (or the entire forward truck, if the large sized shoes are used) the shoes are simply carried along bodily by the moving car until the energy in the movement is absorbed by the friction created by the sliding of the shoes on the rails under the weight imposed upon them.

The principle underlying the design of this type of car stop is, of course, one of stopping cars without the damage that might result if a dead stop should be effected. To permit the sliding movement to take place when a moving car engages the shoes they are placed a distance from the end of the track varying from 10 ft. to 30 ft., depending upon the conditions, a length of 30 ft. usually being sufficient for all purposes. As an indication of the action that takes place when moving cars strike the shoes it was found that when two 50-ton hopper cars loaded with coal struck the shoes at a speed of eight miles an hour the shoes were moved about 30 ft. while a third car of similar capacity striking these two cars, at a speed of about four miles per hour, moved the shoes an additional 6 ft., all of which was accomplished without damage to cars or car stops.

In order to guarantee a certain stop under all conditions the equipment also includes two stop blocks, which are attached to the ends of each rail, and for cases where more than 30 ft. of rail length is desired for sliding distance, special fish plates are provided for installation at the intervening rail joint to permit of the passage of the lugs which hold each shoe to the rail. Aside from affording a certain stop to moving cars without damage, this type of car stop is said to be of advantage in affording a warning to trainmen before the cars are beyond control inasmuch as a car in mounting the shoes experiences a decided although not injurious shock. About 100 of this type of car stop has now been in service experimentally for periods up to about two years on the Nickel Plate, Baltimore & Ohio, and other roads. It is sold by the Maintenance Equipment Company, Chicago.

A Flooring for General Railway Service

ABOUT FOUR YEARS AGO a new type of flooring was introduced which embodied the advantages of both the wood block and the tongue and groove plank floor. This floor, which is known as Bloxonend, was described in the *Railway Age* of October 20, 1916, page 707, and has since had wide application on railroads under a variety of conditions. This service, together with extended use in other



Bloxonend Floor in the Rutherford Shops of the Philadelphia & Reading

industries, has demonstrated the characteristics and adaptability of this construction to specific purposes.

The flooring consists of blocks of southern yellow pine 2½ in. by 3½ in. by 2 in. deep, dovetailed to a 1-in. board to form a unit 2½ in. deep by 3½ in. face and from 7 to 8 ft. long. Each side of the unit is grooved to receive a spline ⅜

in. thick by 11/16 in. wide so that the units may be assembled to make a floor the same way as any tongue and groove floor is constructed. In general this flooring may be used anywhere that a plank flooring may be laid, that is, directly on joists where the spacing is suitable for the loadings to be encountered or on subplanking or on furring strips laid in or on a suitable base such as concrete. These floors have been laid with advantage on top of old floors. This flooring material is available either in the natural state or after being subjected to open tank preservative treatment with carbosota.

The advantages claimed for this flooring include a high resistance to wear obtained by the end fibre exposure, ease of placing either on new or old construction, greater security against buckling or displacement of the blocks and a smooth surface since the blocks are milled after they have been assembled as a unit. It is said that the floor may also be readily taken up to be relaid elsewhere.

A recent improvement in this floor facilitates laying it as a mat floor over a flat surface like concrete, where for any reason the furring strips are not permissible. The floor is assembled in this case by nails driven horizontally into one groove and out through the opposite one so as to connect it through the spline to the adjacent unit. Special nails with flat shanks and chisel points are provided for this purpose, the units being furnished with the nails already in place in holes drilled partially through the strips so that the labor of driving is greatly reduced.

This flooring has been used for a variety of services. Typical railroad installations include the Lang machine shop of the Detroit & Toledo Shore Line where the floor has been in service for 4½ years. A floor of this kind was also laid in July, 1918, in the Philadelphia & Reading's shop at Rutherford, Pa. Freight houses with installations include a Chicago, Milwaukee & St. Paul house at Davenport, Ia.; the Chicago, Rock Island & Pacific house at Little Rock, Ark.; the Illinois Central houses at Kankakee, Ill. and East St. Louis, a Santa Fe house at Argentine, Kan., one on the Michigan Central at Detroit, Mich., and one at Dearborn, and a Pennsylvania freight house at Chicago.

As an indication of the adaptability of this flooring to outside use it is of interest to note that it is being used on the car loading platforms, bridges and galleries of the Armour & Co. plant at South St. Paul, Minn., where it is said that the floors have passed through wide variations of temperature and have been subjected to rain and snow without serious effect.

Another interesting development has been carried out on the Chicago, Milwaukee & St. Paul in the use of the Bloxonend in baggage and express cars. Cars so equipped have been in service for three years without damage or repairs to floors and it is now the intention to apply this flooring to mail cars as well. This flooring is handled by the Carter Bloxonend Flooring Company, Chicago.

ADMIRERS OF HENRY FORD who believe that he can convert any weak railroad into a strong one seem at least to have the virtue of sincerity; a party of them have journeyed all the way from Arkansas to Michigan to see if they can get him to revive the Missouri & North Arkansas, a 300-mile road which numerous experts have found beyond their powers. The "committee," said to represent several towns, had to deal with Mr. Ford's secretary, the "wizard" himself being absent.

UNITED STATES SENATOR DAVID I. WALSH, of Massachusetts, has written a letter to Governor Channing Cox of that State calling upon him to attack the New England railroad problem. Senator Walsh suggests that the Governor call a conference of the New England Governors to discuss ways and means for aiding the railroads and make recommendations to Washington for special legislation if necessary. The senator continues:

"Some reports coming to me recently from official government sources indicate an impending crisis in our transportation system. Even in the face of extreme government assistance, the roads seem to be on the verge of economic breakdown. Reputable banking houses have already refused to make further financial advances to at least one of the big New England roads, and so bad apparently is the status that only with reluctance and against the advice of the treasury-security expert has the Interstate Commerce Commission authorized a loan. Holders of equipment trust obligations may compel the sale and liquidation of that part of the equipment securing these obligations. . . . Even with greatly increased rates the railroads in New England are not able to hold their own and they have already drawn out of the government revolving fund more than their proportiontae share. It is doubtful if the government will advance the more important New England roads any more money in loans.

As a Trucking Floor in the Sante Fe Freight House at Argentine, Kans.

General News Department

The American Association of Freight Traffic Officers will hold its annual meeting on September 19, at the Drake Hotel, Chicago.

Oliver H. Shoup, governor of Colorado, on August 30, invited the governors of 16 western states to join Colorado in efforts to reduce railroad rates.

The American Association of Traveling Passenger Agents will hold its annual convention at Salt Lake City, Utah, on September 12, 13, 14 and 15. The Chicago, Milwaukee & St. Paul will furnish a special train leaving Chicago September 8.

Railroads entering the city of Des Moines, Iowa, have signified their willingness to co-operate with the Des Moines Town-Planning Commission in consideration of plans for a new union station. It is believed that no action will be taken until financial conditions improve, although plans will be carefully developed in the meantime.

Eastbound passenger train No. 34 of the Pennsylvania System, was derailed two miles west of Coshocton, Ohio, on the night of September 2, and 13 passengers were injured. The train consisted of two locomotives and 13 cars. The tender of the second locomotive was derailed and six cars were derailed and overturned.

Edgar E. Clark, formerly chairman of the Interstate Commerce Commission, and Wilbur La Roe, Jr., have formed a partnership under the firm name of Clark and La Roe for the handling of matters before the agencies of the government, including the committees of Congress. Their offices will be in the American National Bank Building, Washington, D. C.

Westbound passenger train No. 3, second section, of the Delaware, Lackawanna & Western, was derailed on a curve one mile east of Apalachin, N. Y., on September 3, and the locomotive fell down a bank. Two coaches were badly damaged and two overturned. One passenger, standing in a vestibule, was killed, and 13 were injured. The engineman and fireman were injured.

Trains on time (passenger trains) on the Pennsylvania Railroad in July numbered 94.2 per cent of the total passenger trains operated; and 96.8 per cent made schedule time. This is an improvement of 16.8 per cent and 9.0 per cent respectively over the figures for March, 1920, the first month after the property was returned to the Pennsylvania management. Engine failures and car failures have been reduced.

Passengers riding free on the Central Pennsylvania Division of the Pennsylvania Railroad are liable, if they don't "watch out," to receive from the conductor, when the train is filled, a small card bearing the following inscription and signed by the division superintendent: "PAY PASSENGERS ARE STANDING. It, therefore, seems appropriate to remind the holders of passes of their duty to refrain from occupying seats when pay passengers are standing."

C. L. Bardo, general manager of the New York, New Haven & Hartford, on September 5, sent out a notice to all employees advising that not one employee had been killed during the month of August, and congratulating them on their successful adherence to "safety first" in their work. It appears that once before—in May, 1920—a similar record was made. This road operates about 2,000 miles of lines with about 1,200 locomotives.

The "Suwanee River Special" is advertised to begin running on November 6 between Cincinnati, Ohio, and St. Petersburg, Fla., over the Southern Railway and the Seaboard Air Line; the first through train to be operated between the Ohio river and the West Coast of Florida. The route via Hampton, Fla., is 552 miles long, approximately 50 miles shorter than any other combination of existing routes. This will be a solid train between Cincinnati and St. Petersburg, with through sleeping cars to and from Chicago, Detroit, Cleveland, Louisville and Cincinnati. Southbound it will leave Cincinnati at 8:10 p. m. It runs via Chattanooga, Atlanta and Macon.

Welding Society Meeting

The Metropolitan Section of the American Welding Society will hold its first fall meeting in the Engineering Societies' building, 33 West Thirty-ninth street, New York, on Tuesday, September 20. The subject of the evening will be "Practical Applications of the Electric Arc Welding Process," with a paper by E. Wanamaker, electrical engineer of the Chicago, Rock Island & Pacific. Mr. Wanamaker is one of the few who can handle this subject so that it will be understandable and interesting.

No Alternative Funding Plan Considered

The Railroad Administration and the White House have denied newspaper reports that an alternative plan for financing the settlements with the railroads in place of that represented by the Winslow bill as passed by the House is under consideration. It is proposed to proceed along the lines originally planned and to pass the Townsend bill through the Senate after Congress convenes after the recess. Meanwhile the Railroad Administration continues to make settlements with the railroads without funding, to the extent of its ability, as it had been doing before the funding proposition was formulated.

September Meeting—New York Railroad Club

A MIGHTY TIMELY SUBJECT!
"WHAT FIXES THE LEVEL OF WAGES?"
A BIG SPEAKER
DR. CHARLES A. EATON

Why Was He Selected? Because there is no more important subject before our railroads today. Because Dr. Eaton made a remarkable record during the war in awakening the thousands of men in the Emergency Fleet Corporation to the importance of their work and their patriotic duty.

Who Is He? He is one of the country's leading sociologists. He was the head of the National Service Section of the U. S. Shipping Board Emergency Fleet Corporation. He is a man's man with unusual executive ability and magnetic personality—and a forceful orator.

Where Is the Meeting and When? Engineering Societies' building, New York City, Friday evening, 8 o'clock, September 16.

A.S.C.E. Discusses National Port Problems

The American Society of Civil Engineers held this week a series of three meetings at the Engineering Societies Building, New York, to discuss national port problems. The first conference was held on Wednesday evening, the speakers being: F. W. Cowie, chief engineer, Harbor Commissioners, Montreal, Can.; Major General Lansing H. Beach, chief of engineers; F. H. Fay, consulting engineer, Boston, Mass.; and M. A. Long, Baltimore, Md. The speakers on Thursday afternoon were: John Meigs, consulting engineer, Philadelphia, Pa.; W. W. Pagon, consulting engineer, Baltimore,

Md.; E. J. Clapp, New York; and C. R. Thompson, assistant director, Department of Wharves, Docks and Ferries, Philadelphia; while those for the evening session were: J. A. Bensel, consulting engineer, New York; W. J. Wilgus, consulting engineer, New York; B. F. Cresson, chief engineer, the Port of New York Authorities, New York; and H. McL. Harding, designing terminal engineer, New York.

The Chicago Safety Council

Ten (10) Chicago railroads are now reporting regularly to the Chicago Safety Council notable cases of reckless conduct by automobile drivers at railroad crossings in that city and district, using a blank which is standard with the council. The report is turned in promptly by the crossing attendant; and Secretary H. J. Bell, acting only in the interest of general safety in the Chicago district, at once communicates with the individual who is shown by the report to be at fault. The railroads which have joined in this movement are the Atchison, Topeka & Santa Fe, the Baltimore & Ohio Chicago Terminal, the Belt Railway of Chicago, the Chesapeake & Ohio, the Chicago, Burlington & Quincy, the Chicago Great Western, the Chicago, West Pullman & Southern, the Elgin, Joliet & Eastern, the Illinois Central and the New York Central. The Chicago Safety Council, acting in co-operation with the Chicago Association of Commerce, is endorsed by numerous prominent manufacturers; and it has committees actively at work on general questions connected with safety on the highways and to expedite the movement of congested traffic anywhere in the city. Secretary Bell estimates that the total loss by accidents and fires in the Chicago district in 1920 was twenty-five million dollars.

Railway Earnings for July

The net railway operating income of the railroads for July makes a more favorable showing than has been reported for any month since last October. Returns from 202 Class I roads, with only one Class I line missing, show a net operating income of $69,485,000, as compared with a deficit last July of $11,878,000. The total operating revenues were $462,953,000, which is a decrease of 12½ per cent as compared with July, 1920, while the operating expenses were $362,776,000, a decrease of 29.4 per cent. Fifty-seven of the 202 roads had deficits for the month. The preliminary report is as follows:

	1921	1920	Per cent of increase 1921 over 1920
Total operating revenues:			
Eastern District	$208,043,000	$241,399,000	d 13.8
Southern District	71,202,000	79,111,000	d 10.0
Western District	183,708,000	208,337,000	d 11.8
United States	462,953,000	528,847,000	d 12.5
Total operating expenses:			
Eastern District	167,007,000	247,414,000	d 32.5
Southern District	58,988,000	79,796,000	d 26.1
Western District	136,781,000	186,577,000	d 26.7
United States	362,776,000	513,787,000	d 29.4
Net railway operating income:			
Eastern District	27,336,000	Def 17,807,000	....
Southern District	8,368,000	Def 3,175,000	....
Western District	33,781,000	9,104,000	271.1
United States	69,485,000	Def 11,878,000	....

Railroad Administration Establishes Short Line Section

The American Short Line Railroad Association has announced to its members what it considers an important victory in its negotiations with the Railroad Administration. Following the conference of officials of the association with President Harding, after which a long memorandum setting forth their condition was laid before the President, a letter was received in reply from Director General Davis, saying that the President had instructed him to receive and consider the claims of the short line roads for the first six months of 1918, and with that end in view a short line section has been created in the Railroad Administration for the purpose of receiving and considering these claims. The Railroad Administration had taken the position that a large number of the short lines were never actually under federal control for this period. Mr. Davis' letter said that as at present advised the administration does not expect to consider any claim for compensation by any short line under federal control that did not have a railroad operating income during the test period. In addition, certain short line roads have entered into what is known as the short line form of contract, waiving any claims against the government. Unless the proper court shall decide that there is a liability on the part of the administration notwithstanding this contract, the claims of roads which have entered into contracts of this character will not be considered.

A Vermiform Appendix

Abolition of the Railroad Labor Board was urged by John M. Glenn, secretary of the Illinois Manufacturers' Association, in a recent address to students of the University of Chicago. Mr. Glenn said:

"The United States Railroad Labor Board is a vermiform appendix that should be removed. It is costing railroads and shippers of this country $2,000,000 a day for each working day in the year. The railroads asked that the $700,000,000 wage grab of July 20, 1920, be wiped out. The Board, dominated by the brotherhoods, reluctantly and timorously reduced wages $400,000,000 a year, leaving $300,000,000 excess war wages which the railroads—and the public—have to pay. The railroads asked for abrogation of the working conditions, which add another $300,000,000 in a year to railroad payrolls, most of it squandered for work that is never performed. The Railroad Labor Board has not abolished these burdensome working agreements. Neither has it taken any steps to do away with the basic eight-hour day which is joyously used by the railroad brotherhoods to exact time and a half and double time wage grabs amounting to more millions.

"This daily $2,000,000 toll for which the Railroad Labor Board is directly responsible, is added to the cost of food, building material and every other commodity for which the consumer has to pay. It is one of the causes for high rents, high fuel, idle factories and general stagnation of business. This useless Board is a political parasite established as a sop to the blustering, bluffing railroad brotherhoods. Its operation is contrary to economic principles. * * *"

The "Port of New York Authority"

Major Elihu C. Church, transportation engineer of the Port of New York Authority, in an address before the Community Leadership Council of the University of Wisconsin at Madison, recently, gave a succinct account of the constitution and purposes of that bi-State establishment.

The Port of New York Authority has the biggest problem of its kind in the world. London and Hamburg have nothing to compare to it. The Island of Manhattan is not the Port of New York. The metropolitan district, with which the Port Authority is concerned, is roughly the area within twenty-five miles of the Statue of Liberty, part in New Jersey, part in New York. The two States have signed a treaty to work together. The district embraces several cities. Its population is about 8,000,000. Within this district are more industrial establishments than in Philadelphia, Chicago, Cleveland and St. Louis combined. The freight cars that enter and leave during a year would fill eight tracks across the continent from New York to San Francisco. An ocean-going ship comes in and one goes out of the harbor about every twenty minutes of daylight every day. The foreign commerce averages over $10,000,000 a day. The port has 800 miles of shore line.

The Port Authority will have the right to own and operate property, and expects to go into the public money market for the funds necessary to carry on its undertakings. The railroad problem is the principal one. The situation is now so complicated that the roads cannot solve it individually. It is only by an authority that can co-ordinate all their activities that any real betterment can be secured. The solution involves joint use of terminals and other facilities, construction of belt lines and marginal railroads along the deepwater front.

"The motor truck of today," said Major Church, "is at the stage of development that the railroads were two generations ago, and it is quite probable that motor highways radiating out from the port may be constructed on a scale hitherto undreamed of."

Traffic News

The Southern Pacific has shortened the time of the Sunset Express, between San Francisco and Los Angeles, 1 hr. and 40 min.

The California State Railroad Commission on August 25 denied the application for a reduction in rates on rice grown in the Sacramento Valley in the case of the Pacific Rice Growers' Association against rail and river carriers.

The Baltimore & Ohio announces that it will continue to make the Pennsylvania station at 7th avenue and 32nd street, New York City, the eastern terminus for its passenger trains, having concluded a new contract with the Pennsylvania.

The Central of Georgia reports that in the month of May its passenger trains made a record of 99 per cent on time; that is to say, 2,779 trains out of 2,814 arrived at their destination on time. And in June the same percentage was accomplished.

The Public Service Commission of Alabama has ordered reductions in freight charges on coal, coke, iron ore and limestone, carried to the furnaces of Birmingham, amounting to about 30 per cent, and to go into effect on or before October 1.

The Illinois Central has leased to the War Department an incline and cradle at Cairo, Ill., for a rental of $25 a year. This incline will be used in the interchange of freight between railroads and the river barges operated by the Government.

The Cincinnati, Indianapolis & Western has put on a new fast freight from Decatur, Ill., to points east. It is train No. 95 and leaves Decatur at 9 p. m., arriving at Indianapolis at 7 a. m. The time from Decatur is 21 hr. to Hamilton, Ohio, and 24 hr. to Cincinnati.

In a referendum conducted by the American Wholesale Lumber Association on the proposed change in demurrage rates, whereby the present sliding rate will be superseded by a flat charge of $3 a day, 47 out of 55 replies favored, and eight opposed, the change.

A total of 45 new industries, representing an investment of $4,430,100, were located along the line of the Chicago & Eastern Illinois during the past year, according to W. J. Jackson, receiver. It is estimated that the new industries will furnish employment for 2,109 persons and will give the railroad 11,000 cars of freight yearly.

The trans-continental railroad lines have agreed on the advisability of making important reductions in freight rates on iron and steel products from eastern points of manufacture to the Pacific Coast, and efforts are being made to get the concurrence of lines east of Chicago to the reductions so that they may be put into operation on October 3, when the new westbound transcontinental rates become effective.

The Southern Pacific has adopted uniform terms to designate its freight line between Pacific Coast points and New York, via New Orleans or via Galveston. Hitherto "Sunset Gulf Route," "Southern Pacific-Morgan Lines," "Sunset Gulf Atlantic Steamship Lines," and many other terms have been used rather loosely. Under the new ruling "Sunset Route" will be the designation for all through eastbound business and "Morgan Lines-Sunset Route" for all through westbound business.

In addition to the reductions in transcontinental rates on canned goods, dried fruits and other California products, which took effect August 22, there will be reductions on other products from the Pacific Coast points to eastern destinations ranging as high as 50 per cent on some articles. These reductions will take effect October 1 and will affect cabbage, potash, wild cherry bark, desiccated and frozen shelled eggs, with other eggs and dairy products: vegetables, tallow, malt, oil-well supplies, children's toys and storage batteries.

Advances in Hudson River Ferry Fares

The Pennsylvania Railroad has advanced its passenger fares between Manhattan (New York) and Jersey City from 3 to 4 cents. The ferry service showed a deficit of $438,273 for 1920. Children, under the new tariff, must pay 3 cents instead of 2 cents, but adults may purchase 10-trip ferry tickets for 30 cents, which is 5 cents above the present 10-trip rate. Increases in rates for horse-drawn vehicles range from 5 to 24 cents; on four-passenger automobiles the rate is increased from 40 cents to 56 cents; eight-passenger from 75 cents to $1.05, and automobile trucks from 16 to 28 cents.

Department of Commerce Creates Transportation Division

The Department of Commerce has announced the appointment of E. S. Gregg as chief of the transportation division of the Bureau of Foreign and Domestic Commerce, which has been created by the department to assist American business men in their overseas work insofar as it relates to the movement of freight by land or water. Mr. Gregg, formerly of Galveston, Tex., is a graduate of Austin College, Texas, and also took the graduate course in transportation at the University of Chicago. During the war he was connected with the shipping section of the general staff of the War Department. He has since been associated with the American International Corporation at New York as advisor on shipping conditions. He is the author of numerous articles on shipping subjects.

Grain Rates to Gulf Ports Reduced

Acting on the carriers applications, the commission on August 31 granted authority for a reduction of 5½ cents per 100 lb. on five days' notice, on grain for export from Missouri river and Mississippi river points; also certain territory between the two rivers and in Illinois, to Gulf ports, Mobile to Galveston, inclusive. Authority was also granted to publish on five days' notice reductions ranging from one cent to 5½ cents per 100 lb. from the territory lying west of the Missouri river in Nebraska, Kansas, Colorado and Oklahoma to Gulf ports. Numerous protests were received against these reductions but after considering all of the facts and arguments the commission thought best to grant the authority. The reduced rates are to apply only during the remainder of the calendar year 1921. The present action does not constitute approval of the relative adjustment of rates either as between the Gulf ports on the one hand and Atlantic ports on the other or with respect to the relative rates from interior western points as compared with Missouri river points.

A National Perfect Package Campaign

A "perfect package campaign," endorsed by the National Industrial Traffic League, will be inaugurated during the month of November under the auspices of the railroad and express companies and the American Railway Association. This campaign is designed to bring about the co-operation of all concerned for the better handling of freight packages. The plan was carried out on a small scale in St. Paul, Minn., last June, in what was known as "Perfect Package Week," when out of 22,248 express packages handled during that period, only 103 were found faulty; with the assumption that the remainder were perfect packages, the proper packing record for that week was 99.54 per cent.

The campaign is to be managed in co-operation with local chambers of commerce. Each railroad agent will be given printed forms which he is to fill out either daily or weekly and present to the chamber of commerce in his locality. This form contains a report, listing each defective package according to three classes of errors, bill-of-lading, marking, and packing. Railroad agents are to be particularly vigilant, and any imperfection in the railroad transportation service will be traced to its source.

This campaign, when first proposed by the National Industrial Traffic League, was to be confined to the New England states, but with its success in St. Paul, it was decided to place such an educational program on a national basis.

Commission and Court News

Interstate Commerce Commission

The commission has reopened the Cleveland passenger terminal case, in which it recently dismissed the application of the New York Central, and has assigned it for rehearing before Commissioner Campbell and Attorney Examiner Clarke at Cleveland on September 20.

The commission has suspended from September 3 until January 1, 1922, the operation of schedules published in a Northern Pacific tariff proposing increases and reductions in rates on cedar poles from certain points in Minnesota to destinations on the Canadian Pacific and Grand Trunk Pacific in Canada.

The commission has suspended from September 5 until January 3, 1922, the operation of schedules published in a Chicago, Rock Island & Pacific tariff which provide that the rates on forest products, from points in Arkansas and Louisiana, to destinations in Central Freight Association territory and Canada, applying through Memphis, Tenn., and Louisville, Ky., will not be subject to transit privileges en route.

The commission has suspended from September 6 until January 3, 1922, schedules which propose reductions in the carload commodity rates on cotton and cotton linters from transcontinental territory on and west of the Mississippi river generally, to Pacific Coast ports for export to points in the Orient. On cotton and cotton linters to Pacific Coast ports it is proposed, if compressed after delivery to carrier, to reduce from $1.50 to $1.35, and if compressed before delivery to carrier from $1.36½ to $1.21½.

The Interstate Commerce Commission has issued a decision upon reargument of the case involving rail and water rates from Atlantic seaboard territory to Texas points. The commission finds unduly prejudicial class rates from seaboard territory to Houston made by the use of differentials over the rates to Galveston, which are lower than the differentials applied in making rates from Galveston higher than those from Houston to points in Texas. Otherwise proposed reductions in class and commodity rates from Atlantic seaboard territory to Texas points, the commission finds, are not shown to be unjustly discriminatory, unduly prejudicial or otherwise unlawful.

State Commissions

The Southern Pacific has filed an application with the Public Service Commission of Nevada, asking authority to abandon its Metropolis branch, which extends from Tulasto to Metropolis, in Elko county, a distance of eight miles.

The railroad commission of Georgia has called upon all the railroads of the state to appear on September 13 and show cause why intrastate freight rates should not be revised to eliminate discrimination, due to disregard of the long and short haul rule as described in the federal law.

The California State Commission has ordered the crude oil rates on the Oil City-Parque Branch Line reduced from 5½ cents to 3 cents per 100 lb., with a minimum charge of $15 a car. This line runs from Oil City and Ainrof, Cal., to Waits, and is owned jointly by the Southern Pacific and the Santa Fe.

Personnel of Commissions

Frederick I. Cox, the new member of the Interstate Commerce Commission appointed to succeed Edgar E. Clark, took the oath of office on September 1 and made his first public appearance as a member of the commission at the hearing in the western grain rate case.

Foreign Railway News

New Zealand's Premier Favors British Manufacturers

W. F. Massey, prime minister of New Zealand, speaking at Darlington, England, is quoted by the Times (London) Trade Supplement as saying that in his dominion British goods are now given preference and that he hopes that more can be done in that direction in the next few months. He states further that New Zealand is coming to Britain soon to place orders for 2,500 freight cars, 45 locomotives and a quantity of rails.

Track Material Exports in July

The downward trend of the exports of railway equipment and supplies continues in the July totals for the exports of track materials, when compared with similar totals for June. In July 928,272 lb. of track spikes, valued at $36,026 were exported as compared with 1,566,050 lb., valued at $79,434 in June. July exports of steel rails totaled 20,070 tons, valued at $1,018,859, as against 20,308 tons, valued at $1,083,344 for the preceding month. Miscellaneous track materials slumped off from $568,134 in June to $146,464 in July. Detailed figures by countries as compiled by the Bureau of Foreign and Domestic Commerce, follow:

Countries	Railroad spikes		Rails of steel		Switches, frogs, splice bars, etc.
	Pounds	Dollars	Tons	Dollars	Dollars
Norway	.....	.....	.....	.....	1,960
England	.....	.....	30	1,671	4,273
Canada	15,615	739	4,992	285,348	37,284
Costa Rica	11,400	518	.....	.....	1,368
Guatemala	.....	.....	.....	.....	1,113
Honduras	131,250	4,102	1,874	91,059	9,573
Nicaragua	40,000	1,372	.....	.....	.....
Panama	.....	.....	.....	.....	1,369
Salvador	.....	.....	.....	.....	975
Mexico	125,096	5,313	224	10,842	683
Jamaica	.....	.....	.....	.....	75
Cuba	151,208	5,400	305	15,926	8,045
Dutch West Indies	.....	.....	349	14,309	.....
Dominican Republic	22,000	913	.....	.....	160
Brazil	1,200	90	301	19,567	23,596
Chile	.....	.....	341	20,020	3,457
Colombia	7,419	406	6	430	20
Ecuador	3,000	143	25	1,185	436
Peru	17,000	767	.....	.....	.....
Venezuela	.....	.....	.....	.....	90
China	118,644	6,172	1,764	75,496	8,096
Kwantung, leased territory	.....	.....	4,713	195,422	25,649
Dutch East Indies	.....	.....	3,455	195,049	2,850
Japan	74,960	2,856	694	32,421	1,398
Siam	.....	.....	1,001	60,114	192
Australia	.....	.....	.....	.....	4,075
New Zealand	.....	.....	.....	.....	9,699
Philippine Islands	209,480	7,235	.....	.....	28
Total	928,272	36,026	20,074	1,018,859	146,464

Reorganization of the Hungarian State Railways

LONDON.

The Hungarian State Railways have under their management 4,382 miles of which 1,863 miles are State owned. The present condition of the track is only adequate for the requirements of the reduced traffic; and buildings and bridges are in urgent need of restoration. The total amount needed for this purpose is estimated at $1,620,000. It is also stated that a sum of about $5,300,000 will be required for repairing old locomotives and new locomotives. Of the 2,237 locomotives claimed by the Hungarians under the stipulations of the Reparations Commission, only 1,717 have been received and the majority of these are in a worn-out condition and of low efficiency. On June 30, there were only 2,348 passenger cars available out of a total of 8,846, and it is estimated that in order to develop the passenger traffic 1,000 cars will be needed. This coupled with the need for repairs will call for a sum of about $2,320,000. A similar state of affairs is encountered in the case of freight cars, for which a sum of $5,550,000 will be required. It will therefore be seen that in order to put the Hungarian railways on a sound basis an estimated total of $18,000,000 will be needed.

The reorganization of the Hungarian railways depends to a large extent upon the agreements with regard to mutual traffic which are made with contiguous States, such as the settling of

the frontier and terminal stations, upon which the building of water stations and so forth is based. Should the lately designated boundaries be definitely decided upon, it would be necessary to make considerable alterations to the various classes of stations and buildings.

As to general traffic conditions, the great need of coal, freight and passenger cars, and locomotives is the ruling factor. The coal question is especially difficult, so much so that the railways are hardly able to handle their small inland traffic.

Railway Wages in Great Britain

The average weekly earnings of railway employees in Great Britain prior to the war in 1914 was 25 shillings a week (about $6 at par exchange). Many increases were granted as living costs rose—at first by granting bonuses and later by making these bonuses a part of the regular weekly wage. By April, 1919, the average weekly rate had been increased to 63 shillings (approximately $15.75 at par exchange). At this time it was agreed to add one shilling (approximately 25 cents) to the rate for every increase of 5 points in the index of the cost of living and a similar deduction for every decrease of 5 points. Permanent standards or "stop" rates were fixed at a point approximately 100 per cent above pre-war wages. Beyond this "stop" wages may not fall. The average "stop" is 53 shillings (approximately $13.25).

Under the sliding scale of wages, with increases of one shilling for each increase of 5 points in the cost of living index, wages were increased $2 a week above the 1919 rate. Since living costs have dropped, wage rates under the sliding scale have been decreased $2.25 a week. Generally speaking, therefore, wages are now about $15 a week, or 150 per cent above the pre-war level.

"Stop" rates for some occupations are given in the following table. To arrive at the present rates $2.50 should be added to the "stop" rate.

Guards (Trainmen)		Shunters (Switchmen)	
First year	$12.50	Class 1	$16.25
Second year	12.50	Class 2	15.00
Third year	13.75	Class 3	13.75
Fourth year	13.75	Class 4	12.50
Fifth year	15.00	Station Foremen	
Sixth year	15.00	Class 1	$16.25
Seventh year	15.00	Class 2	14.50
Eighth year	16.25	Porters, Lampmen and Crossing Watchmen	from $10.00 to $12.00
		Ticket Collectors,	from $13.50 to $15.00

Note—Shillings to dollars at .25.

The total wage bill of the British railways in 1920 amounted to $798,106,000, as compared with $228,725,000 in 1913, or an increase of 250 per cent. Fifty-two cents of every dollar spent by the railroads in 1920 went for wages, as compared with 35 cents in 1913. The *Railway Age* is indebted to the Bureau of Railway Economics for the data herewith presented.

Training of Apprentices on the Victorian Railways

The State Railways of Victoria, Australia, have in operation a comprehensive system of training apprentices, according to the Engineer (London). To quote: "Under these regulations it is possible to obtain a very good class of youths who, after a training in technical and practical work, are well prepared to become first class tradesmen, and eventually foremen. In some cases, when the ability of an apprentice is outstanding, he may become a member of the professional staff, and in course of time may be appointed head of his branch, as has occurred quite recently, when one, who joined the service as an apprentice 15 years ago, was appointed chief electrical engineer of the Victoria railways."

Bulletins are posted in various places announcing vacancies in the occupations and applicants apply in writing. When an apprentice is employed he is placed on probation for six months at the end of which time his fitness has been determined. The period of apprenticeship is five years, during which time the apprentice performs duties of the trade he is studying at one of the shops of the system. At the same time he must attend classes in designated trade schools where his tuition is paid. Apprentices are, as a general rule, paid 75 cents a day for the first year, 93 cents the second year, $1.31 the third year, $1.68 the fourth year and $2.25 the fifth year.

The school work required of all first year apprentices is the same, viz.: elementary science, arithmetic and geometry. In the second year the courses are mathematics, drawing and applied mechanics. Different courses are provided the third year for various crafts. Some of them are algebra, solid geometry, engineering drawing, electricity, steam and design. Various prizes are offered by the company for good school work and of each third year class one student is chosen to study engineering. This student devotes the next two years, full time, to this work and receives $650 a year in lieu of wages besides his free tuition. If he completes the course satisfactorily he is given the position of engineering assistant at an entrance salary of $1,125 per annum.

Bids on Equipment for China

Frank Rhea, trade commissioner at Peking, has prepared an interesting analysis of the recent bids of equipment concerns for cars and locomotives for China. The successful bids were not accepted on a basis of price alone, but also on strict adherence to the specifications. The bids were as follows:

30 Prairie Type Locomotives

Nationality		Nationality	
Belgian	$35,610	German	$49,215*
Japanese	40,296	British	50,878
American	44,200*		

6 British Type Locomotives

Belgian	34,201	British	43,805
American	43,230*	German	49,540*

3 Pacific Type Locomotives

American	50,880*	British	53,348
Japanese	39,822	German	53,910*
Belgian	40,525		

2 Mikado Type Locomotives

American	52,000*	British	55,567
Belgian	43,170	German	57,000*
Japanese	47,408		

100 Open Cars

Belgian	2,464	Japanese	2,844
German	2,283	British	3,786
American	2,550*		

100 Covered Cars

Belgian	2,674	American	2,620*
German	2,509	British	4,325

Note—Shanghai Taels shown as dollars at .645.
*Original bid in dollars.

From the above tables it will be noticed that the Belgian and Japanese bids are usually lowest and the British and German the highest with the American bids intermediate. The successful bidders in each case were as follows:

Orders	Successful bidders	Manufacturers
30 Prairie locomotives	Société Belge pour l'Export. Ind.	Various Belgian manufacturers.
6 British locomotives	Société Belge pour l'Export. Ind.	Various Belgian manufacturers.
2 Mikado locomotives	Mitsui Bussan Kaisha.	American Locomotive Company.
3 Pacific locomotives	Mitsui Bussan Kaisha.	American Locomotive Company.
100 Open cars	Fearon, Daniel & Co.	Cie, Général de Construction, Belgium.
100 Covered cars	Fearon, Daniel & Co.	Cie, Général de Construction, Belgium.

It will be noted that the greater part of the business went to Belgium, because these bids were in most cases the lowest conforming strictly to specifications. The factor of exchange, of course, enters largely into these bids. According to Mr. Rhea, if the Belgian franc would increase from 8 cents to 10 cents in exchange value the Belgian bids would in most cases cited above have been higher than the American bids.

Government Ownership Scathingly Denounced in Australia

That the output of primary products in Australia is decreasing is the statement of A. W. Pearse, editor of the Pastoralists' Review in an article in the Railway Gazette (London). Mr. Pearse lays the blame for this unhealthy condition at the door of the state owned railways. Mr. Pearse says:

"The fact is that when the Australian states determined on a state owned railway system they took the wrong turning, the one that naturally led to stagnation. It meant that the country could only get railways constructed through already populated districts, and then only by political intrigue. It meant centralization at the termini of the one system of railways. It meant cutting off from all country districts their rightful means of taxa-

tion, which was needed by them for their local requirements, and it meant that only a very few immigrants would be brought in, and those mostly of poor quality. It further meant a railway monopoly of the worst description, viz., a political one, with the very worst accommodation. In fact, there being no competition, it meant that the public had to put up with anything the government could afford or intended to give them. Further than that it meant that, when all the state's assets were pawned and no more money could be borrowed, railway construction would cease. And, after all these drawbacks, the one reason given, viz., that the railways belonged to the people, is found to be a fallacy, because they are pawned over and over again to the bondholder, and have to be run to produce his interest. There is not one single redeeming feature in state ownership of railways."

Mr. Pearse goes further to compare the Australian railways with the Canadian Pacific. The value of that company to Canada in building up industries and encouraging the immigration of desirable foreigners is compared with the lack of interest of the Australian railways in all such matters. Continuing he says:

"There is another blot against our system. The railways are not liable for robbery, damage, or bad treatment of livestock or anything else. Employees, because they have votes, can almost do as they like, and no one dare 'sack' them. On private railways discipline must reign; and here comes in the main reason why politicians like to own the lines. Discipline and good conduct are abhorrent to a large section, and the votes of that section have to be pandered to."

Continuous Brakes in Germany

"It is well known," says the Railway Gazette (London), "that Germany is one of the countries where prior to the war the Westinghouse air-pressure brake was in general use. During the war conditions suffered a change, inasmuch as the Prussian authorities in their triumphant state of mind decided to introduce something different in detail from the Westinghouse air brake, in order to avoid foreign influence in this line of business and with a view to eliminating as far as possible foreign enterprise in the German territories. To find possible opportunities for alterations in the Westinghouse brake system the patents of this company were carefully studied, with the result that the fundamental idea in one of these patents—which happened to have just expired—was selected and developed into a so-called differential brake by introducing a very complicated new kind of valve.

"Letting alone for the present its technical features, it must be said that the innovation was effected by the Knorr Company in direct co-operation with the railway authorities themselves and their high officials; in fact, the name of the so-called new brake system includes the name of one of these officials. The Prussian government then decided to replace the Westinghouse brake by this newly-prepared system, pushing ahead the introduction of the so-called Kunze-Knorr brake with the greatest energy. Thus a fact was established to compel their enemies (after Germany emerged victorious from the war) to adopt the same kind of innovations that they themselves were going to introduce. The government went ahead so precipitately that as early as 1917 the means necessary to fit up the entire rolling-stock of their goods wagons (i. e. freight cars) with this new brake were afforded by the Prussian Diet. The execution of the program was taken up without delay. As a second step the Prussian government went on to eliminate Westinghouse, assigning to the Knorr company practically the whole of the repairs on cars equipped with the Westinghouse brake proper, the brake parts being provided from the stores of the Knorr company as "Knorr-West brake parts," as they were called, and at prices which are fixed in an official catalogue.

"Both England and America think that these peculiar ways are neither in accordance with the aims of the International Commission, which in itself has been shunned by the Prussian authorities, nor with certain stipulations of the Peace Treaty. It would be interesting if the German Government would explain why, in spite of its heavy financial obligations, it is spending such enormous sums for new equipment, which expenditure could not be afforded even by the victorious parties for similar purposes."

Equipment and Supplies

Locomotives

THE ARGENTINE STATE RAILWAYS are inquiring through the locomotive builders for prices on 6 locomotives.

THE TOLEDO, ST. LOUIS & WESTERN has ordered 5 Consolidated type locomotives from the Lima Locomotive Works.

Freight Cars

THE INTERSTATE RAILROAD contemplates having repairs made to 200, 50-ton steel coal cars.

THE DELAWARE, LACKAWANNA & WESTERN is asking for prices on 1,000 steel hopper cars of 50 tons' capacity.

THE WELLMAN-SEAVER-MORGAN COMPANY, Cleveland, Ohio, is inquiring for prices on 2, 50-ton cast steel trucks.

THE PERE MARQUETTE has awarded a contract for the repair of 350 wooden box cars to the International Car Company, Chicago.

THE BALTIMORE & OHIO, reported in the *Railway Age* of September 3, as inquiring for prices on 1,000 box and 1,000 gondola car bodies, is also asking for prices on 400 refrigerator cars, and on the repair of 1,500 box cars, 500 steel gondola cars, 500 hopper cars and 500 coke cars.

THE SOUTHERN PACIFIC, on account of the return of bad order cars to its lines, in larger numbers than could be expeditiously handled by its own forces, is having repairs made to some of these cars at the shops of the Southern Dry Dock & Shipbuilding Company at Orange, Tex. Up to the present time 100 cars have been repaired at these shops.

Passenger Cars

THE BOLIVAR RAILROAD (Venezuela) is inquiring through the car builders for 5 passenger cars.

THE COLUMBIAN NATIONAL (South America) is inquiring through the car builders for cars for passenger train equipment.

THE TIENTSIN-PUKOW, reported in the *Railway Age* of April 22, as inquiring through the car builders for from 30 to 50 passenger cars, has ordered from the Pressed Steel Car Company 10 first-class sleeping cars, 10 second-class sleeping cars, and 10 third-class sleeping cars, 5 dining cars, 5 drawing-room cars, 5 baggage, 5 postal and 3 private cars.

Iron and Steel

THE NORFOLK & WESTERN will receive bids at Roanoke, Va., until 12 o'clock, noon, September 21, 1921, for: 75,000 lb. soft steel bars, 71,000 lb. welding steel, and 280,000 lb. steel shapes.

Miscellaneous

THE BOSTON & ALBANY will receive bids, until 12 o'clock noon September 6, at Boston, Mass., for 1 trailer truck; 1 engine truck; 1 foot plate; 2 steam pipes; 4 steam pipe flanges; 1 pair cylinders for locomotives, and 2 relief valves.

THE PANAMA RAILROAD, 24 State Street, New York, will receive bids until 12 o'clock noon, September 20, for its requirements for one year from October 1, of fuel oil for steamship service. The contract calls for between 400,000 and 500,000 bbls. of oil.

THE NORFOLK & WESTERN will receive bids until 12 o'clock noon September 14 at Roanoke, Va., for 1,000 double coil steel springs;

50 bars special welding steel; 640 rods of wire fencing, and 545 kegs common wire nails, also for parts for electrical apparatus and for repairs to electrical apparatus.

THE NORFOLK & WESTERN will receive bids at Roanoke, Va., until 12 o'clock, noon, September 14, 1921, for 1,000 double coil steel springs, 50 bars special welding steel, 640 rods of wire fencing, 545 kegs common wire nails, repairs to electrical apparatus and parts for electrical apparatus.

THE SOUTH BUFFALO RAILWAY will receive bids until 12 o'clock noon September 12, at Lackawanna, Erie county, New York, for: 200 gross tons 80-lb. rail; 50 gross tons 90-lb. rail; 100 pairs of angle bars for 80-lb. A. S. C. E. rail and 100 pairs of angle bars for 90-lb. rail, also for 50 kegs of track bolts.

THE MISSOURI, KANSAS & TEXAS has concluded a contract with the William Graver Tank Works, Chicago, for the supplying of 55,000-bbl. steel oil storage tanks, 114 ft. 6 in. in diameter by 30 ft. 2¾ in. high, together with four 1,000-gal. steel elevated tanks on 24-ft. steel substructures and four 20,000-gal. horizontal tanks to be installed on a 20-ft. substructure. This equipment will be used in connection with the storing and supplying of oil for oil fuel-burning locomotives which the M., K. & T. expects to put into operation on several divisions this fall.

Railway Construction

CANADIAN NATIONAL.—This company will build a frame freight and passenger station at Barrante, Quebec. The structure will be 21 ft. by 65 ft. and will include a machinery platform 16 ft. by 29 ft.

CENTRAL VERMONT.—This company has awarded a contract to the Roberts & Schaefer Company, Chicago, for the erection of an electric cinder conveyor at St. Albans, Vt.

CHICAGO, ROCK ISLAND & PACIFIC.—This company is contemplating the erection of an ice house at Manly, Iowa, to cost approximately $10,000.

CHICAGO, ROCK ISLAND & PACIFIC.—This company has awarded a contract to the T. S. Leake Construction Company, Chicago, for the erection of an addition to its roundhouse at Eldon, Mo., to cost about $40,000.

CHICAGO UNION STATION.—This company, which was noted in the *Railway Age* of August 27 (page 425), as accepting bids for electrical equipment for the sub-station to be installed in connection with its new railway terminal building, Chicago, has awarded the contract for this work to the Allis Chalmers Company, Milwaukee, Wis.

CHICAGO UNION STATION.—This company is accepting bids for the sub-structure for a viaduct at Madison street, Chicago.

TOLEDO, ST. LOUIS & WESTERN.—This company has awarded a contract to the Ogle Construction Company, Chicago, for the construction of a 300-ton steel coaling station at Charleston, Ill.

WICHITA NORTHWESTERN.—This company has applied to the Interstate Commerce Commission for a certificate of public convenience and necessity authorizing the construction of a line from Vaughn to La Crosse, Kans., 14 miles.

EIGHTY-EIGHT ALLEGED violations of the law forbidding railroads to keep train crews on duty longer than sixteen consecutive hours are cited in suits filed against the Philadelphia & Reading in the United States District Court at Philadelphia on August 17.

NEW YORK UNIVERSITY announces that the class in Freight Traffic Management will have its first session at the Wall Street Division of the University on Friday, September 23. The class is conducted by Asa Colton, lecturer on Trade and Transportation in the University. Men who are authorities on various phases of traffic work will address the class. The New York University Transportation Club holds monthly sessions with interesting speakers on various phases of domestic and foreign traffic. The next meeting of the club will be held at the Wall Street Division (90 Trinity Place) on Thursday evening, September 15. Everybody invited.

Supply Trade News

The **Conewanga Car Company,** it is reported, will be organized to take over the plant and business of the Allegheny Tank Car Company, Warren, Pa.

J. E. Slimp, formerly with the **Ohio Brass Company,** and recently with the **E. T. Chapin Company,** Spokane, Wash., as sales manager with office at Chicago, has resigned.

Thomas H. Greenwood has been appointed factory manager of the **McDougall-Butler Co., Inc.,** Buffalo, N. Y., makers of paint and varnish for railway uses. This company has appointed the **Ehrlich Paint Company,** Cincinnati, Ohio, as its representative in the Cincinnati district.

F. H. Sauter, formerly associate editor of the Locomotive Dictionary, has accepted a position with **Gibbs & Hill,** consulting engineers, Pennsylvania Station, New York City. His work with this firm will have to do with the development of railway electrification. Mr. Sauter was born in Schenectady, N. Y., February 1, 1877, and was educated in the public schools of Schenectady. In 1894, he entered the General Electric Company's factory and completed a mechanical engineering course under private instruction during the factory employment period. In January, 1900, he entered the General Electric Comment and in 1903, he pany's drafting depart- worked with the Schenectady Railway Company as assistant master mechanic. In the fall of 1904, he served with the Peckham Manufacturing Company, Princeton, N. Y., as electric truck designer. In 1905, he entered the services of the American Locomotive Company, Schenectady, N. Y., and while with this company, he held positions as draftsman and designer of steam locomotives, electric trucks, and electric locomotives, and as electric locomotive and truck estimating engineer. In December, 1917, he entered the employ of the Simmons-Boardman Publishing Company as associate editor of the Locomotive Dictionary. He went to the Crown, Cork & Seal Company, Baltimore, in May, 1918, and in July of that year was made supervisor of Trade Machinery and in April, 1920, assistant manager of the machine erecting department. The duties of this position included adjustment of machine complaints and personal visitation of the trade in the entire territory east of the Mississippi and some of the Western states. On June 1, 1921, he resigned to accept his present position.

F. H. Sauter

The **J. G. Brill Company,** Philadelphia, Pa., announces the formation of a new company, the **Canadian Brill Company, Ltd.,** organized to build and sell electric and steam railway rolling stock in the Dominion of Canada. The new company has taken over the plant and equipment of the Preston Car & Coach Company, Ltd., Preston, Ontario, and has a number of orders now in process of construction. This plant is a modern car shop, having 11½ acres of ground located on the outskirts of the city. The executives of the new company are: **Samuel M. Curwen,** president; **H. K. Hauck,** first vice-president; **Alfred Clare,** second vice-president; **H. D. Scully,** general manager and secretary; and **E. P. Rawle,** treasurer.

Fred A. Poor, Patrick H. Joyce, and **Edward N. Roth,** have been elected members of the board of directors of

Mudge & Company, Chicago. There has been no change in the control of the company, its management being as heretofore in charge of **Burton Mudge,** president, and **Robert Sinclair,** vice president. The other directors of the company are **Burton Mudge, Robert Sinclair, Egbert H. Gold** and **Edwin W. Sims.**

Carl F. Dietz has resigned as vice-president and general sales manager of the Norton Company, Worcester, Mass., effective October 1, to become president and general manager of the Bridgeport Brass Company, Bridgeport, Conn. Mr. Dietz has been with the Norton Company for ten years, first as plants engineer, then consecutively as assistant sales manager, sales manager of the wheel division and for two years general sales manager of the entire business. **W. LaCoste Neilson,** vice-president, succeeds Mr. Dietz as general sales manager. Mr. Neilson has been with the Norton Company for 14 years. He served for a few years as assistant sales manager, then was in charge of all foreign business, including sales and the management of the foreign plants at Wesseling, Germany, and at La Courneuve, France, with office in London, England. He was appointed a vice-president two years ago and will take charge of general sales at Worcester on October 1. He will also continue to direct the company's foreign affairs for the present.

Obituary

Kenneth F. Rushton, vice-president in charge of engineering of the Baldwin Locomotive Works, died on September 2 at his home at Wynnewood, Pa., at the age of 59.

Trade Publications

CHUCKS.—Prices and code words for the different styles of chucks manufactured by the Cushman Chuck Company, Hartford, Conn., are listed in a 16-page illustrated booklet which the company has recently issued. The booklet is neatly arranged and has an outside cover of transparent celluloid.

ELECTRICAL EQUIPMENT.—All Benjamin electrical products are listed and described in catalog No. 23, published by the Benjamin Electrical Manufacturing Company, New York. The catalog is a book with a stiff cover containing 252 pages, and special attention has been given to the grouping of the products listed to add to the convenience of the user.

SHALLOW PITS AND OTHER COALING PLANTS.—The Roberts & Schaefer Company, Chicago, have issued bulletin No. 43 dated August 21, 1921, containing 28 pages descriptive of the coaling stations and coaling station equipment manufactured and erected by that company with particular reference to the shallow pit type of station. The bulletin consists primarily of photographs and descriptive captions concerning coaling stations recently built by that company, including the new Tulip street coaling station built for the Philadelphia & Reading at Philadelphia.

THE TANK CAR.—An unusually important catalog which will be of interest to owners and users of tank cars has just been issued by the Pennsylvania Tank Line, Sharon, Pa. In addition to illustrations and specifications of cars as made by the Pennsylvania Tank Car Company, the catalog contains considerable general information, such as the A. R. A. standards and specifications for tank cars, interchange rules, mileage, demurrage, car accounting records, regulations for the transportation of inflammable and other dangerous liquids, safety appliance standard, and gage tables for contents of tank cars.

RAILWAY CARS FOR EXPORT AND DOMESTIC USE.—A very complete catalog of railway cars of both export and domestic types has just been issued by the joint export sales offices of the Magor Car Corporation of New York and the National Steel Car Corporation, Ltd., of Hamilton, Ontario, Canada. The book is well illustrated and metric equivalents of all dimensions are given. A private cable code is also included for the convenience of customers. It is planned to issue other editions later in Spanish, Portuguese and French. This catalog contains 155 pages, 9 in. by 13 in.. and is well printed and bound.

Railway Financial News

ARANSAS HARBOR TERMINAL.—*Authorized to Issue Notes.*—This company has been authorized by the Interstate Commerce Commission to issue $50,000 of prior lien five-year gold notes at 6 per cent, to be pledged with the Secretary of the Treasury as security for a loan.

Loan Approved.—The commission has also approved a loan of $50,000 to this company to assist it in reconstructing 6½ miles of its main line that were destroyed by a hurricane.

BELFAST & MOOSEHEAD LAKE.—*Acquisition by Maine Central Authorized.*—The Interstate Commerce Commission has approved the acquisition by the Maine Central of control of this company under lease.

BENNETTSVILLE & CHERAW.—*Authorized to Abandon Line.*—The Interstate Commerce Commission has issued a certificate authorizing this company to abandon the operation of a portion of its railroad from Brownsville to Sellers, S. C., 10.44 miles.

CAMBRIA & INDIANA.—*Authorized to Issue Note.*—The Interstate Commerce Commission has granted authority to issue a one-year 7 per cent promissory note for $500,000, the proceeds to be applied toward the payment of $800,000 of two-year gold notes, and the company has also been authorized to pledge as collateral security therefor $750,000 of its 6 per cent general mortgage bonds.

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS.—*Asks Authority to Issue Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue $3,500,000 of refunding and improvement mortgage 6 per cent bonds to be deposited with the director general of railroads as security for a note for a like amount for additions and betterments which were made during the period of federal control which are to be funded.

COLORADO & SOUTHERN.—*Asks Authority to Abandon Line.*—Application has been filed with the Interstate Commerce Commission for a certificate authorizing the abandonment of the line from Buena Vista to Romley, Colo., 29.42 miles, which was built to serve mines that are now closed and which no longer has connection with other parts of the company's line.

DENVER & RIO GRANDE WESTERN.—*New Director.*—Bulkeley Wells, of Colorado, has been elected a director.

EAST ST. LOUIS JUNCTION.—*Authorized to Issue Promissory Notes.*—The Interstate Commerce Commission has granted authority to issue a demand note to the amount of $92,000, payable to the St. Louis National Stock Yards with interest at 7 per cent.

FLINT BELT.—*Acquisition by Pere Marquette.*—See Pere Marquette.

GEORGIA RAILROAD & BANKING COMPANY.—*Asks Authority to Issue Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue $1,500,000 of 6 per cent debenture bonds dated October 1, 1921, the proceeds to be used to retire $1,200,000 of 5 per cent bonds and $300,000 of 6 per cent bonds. Arrangements have been made for the sale of the bonds at 95 to Spencer, Trask & Co. and William E. Bush & Co.

GRAND TRUNK.—*Stock Declared Worthless.*—The common and preferred stocks are described as valueless in the opinion of the majority of an arbitration board appointed to determine what the Dominion Government should pay stockholders because of its purchase of the system. The decision, given by Sir Walter Cassels, chairman of the board, and Sir Thomas White, representative of the government, was made public on September 7. William H. Taft, the other member of the board, who heard arguments in the matter before becoming Chief Justice of the United States, dissents. He was selected by the company.

Mr. Taft in his minority decision fixed no value for the stock, but said the shareholders were entitled to some con-

sideration. He said the great mistake of the shareholders was the association of the old company with the construction of the Grand Trunk Pacific.

"Had the policy dictated from London been as wise and efficient as the management in Canada," he said, "the fate of the Grand Trunk would have been different."

It is expected that the Grand Trunk will exercise its right of appeal to the Supreme Court or the Privy Council against the award.

Sir Thomas White announced the following as his conclusions:

1. The actual earning power of the Grand Trunk Railway Company before, during and since the war, and so far as can be estimated for the future, does not justify the assumption that any profits would, from the date of the acquisition by the government of the preference and common shares, namely, May, 1920, ever have been available for distribution to the holders thereof, after providing for the contingent liability of the company in respect of Grand Trunk Pacific securities guaranteed by the company and dividends upon the guarantee stock.

2. Having regard to its own continuing heavy deficits, the necessity for making provision for deferred and extraordinary maintenance and the capital construction, and its heavy liabilities in respect of securities of the Grand Trunk Pacific bearing its guarantee, the Grand Trunk Railway, but for the financial support of the government since May, 1920, must have been forced into receivership.

Upon these conclusions I find that the preference and common stock of the Grand Trunk Railway of Canada has no value. Any question as to compassionate consideration of the shareholders must be for the government and the Parliament of Canada to deal with and not for this board.

LIBERTY WHITE.—*Authorized to Abandon Line.*—The Interstate Commerce Commission has issued a certificate authorizing the abandonment of this company's line from Liberty to South McComb in the counties of Pike and Amite, Miss. About 25 miles of the line was abandoned two years ago and the certificate authorizes the abandonment of the remaining portion, on the ground that the company has neither funds nor income with which to pay operating expenses or to meet debts already incurred, and the road has been declared by the Mississippi Railroad Commission unsafe for operation.

MAINE CENTRAL.—*Acquisition of Belfast & Moosehead Lake.*—See Belfast & Moosehead Lake.

MICHIGAN CENTRAL.—*Annual Report.*—A review of this company's annual report for 1920 appears on another page of this issue.

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—*Bond Sale.*—Dillon, Read & Co. have sold an issue of $10,000,000 ten-year 6½ per cent collateral trust bonds at 99½. The bonds are offered subject to the approval of the Interstate Commerce Commission. They are secured by $12,500,000 25-year first refunding mortgage 6 per cent bonds, series A, which series is limited to $15,000,000.

PENNSYLVANIA.—*Official Statement Concerning Dividend.*—Accompanying the one per cent quarterly dividend checks mailed to the more than 140,000 stockholders is a note from President Samuel Rea, which says:

A check is enclosed herewith for a dividend of 2 per cent (50 cents a share) upon stock registered in your name. This dividend is at the same quarterly rate as that paid three months ago. Prior to that date for a number of years the quarterly rate was 1½ per cent. The decrease in traffic and the unsettled condition of business generally emphasize the policy of the directors in making this reduction. They felt that, although the dividend has not been earned in the present quarter nor in the portion of the year that has elapsed, yet, having regard for the maintenance of the company's credit, and, therefore, for the best interests of its stockholders, it was desirable to declare a dividend of 1 per cent for the present quarter.

The company also sent to each stockholder an abstract of the answer made to the Railroad Labor Board, which was published in the *Railway Age* of August 27, 1921, page 399.

PERE MARQUETTE.—*Authorized to Acquire Control of Flint Belt.*—The Interstate Commerce Commission has authorized the acquisition by this company of control of the Flint Belt by purchase of its capital stock.

SANTA FE, RATON & DES MOINES.—*To Be Sold.*—Special Master Robert Lawrence will offer this road for sale at Raton, N. M., on October 18, to satisfy a mortgage held by the United States Mortgage & Trust Company, as trustee, made March 1, 1906, to secure a bond issue of $1,000,000.

SOUTHERN.—*Hearing on Guaranty for Subsidiaries.*—Hearings were held at Washington on September 1, 2 and 3 before Director Colston, of the Bureau of Finance of the Interstate Commerce Commission, on the question of the eligibility of this company's subsidiaries to a guaranty for the six months following the termination of federal control, in view of the fact that the Southern Railway, the parent company, filed no application for the guaranty, although the subsidiaries did file written acceptance of the guaranty provisions. H. W. Miller, vice-president, gave testimony to the effect that the subsidiary companies were operated separately.

TEXAS & NEW ORLEANS.—*Ask Authority to Lease State Road.*—This company has filed an application with the Interstate Commerce Commission for authority to lease for five years the tracks, facilities and appurtenances of the Texas State Railroad, owned by the state of Texas, which extends from Rusk to Palestine, Texas, 32.6 miles. The state authorities were authorized by recent act of the legislature to sell or lease the road. Under the lease proposed the Texas & New Orleans is to pay the board of managers of the road 50 per cent of the net operating income as rental.

TEXAS & PACIFIC.—*Annual Report.*—The corporate income account for the year ended December 31, 1920, compares with the preceding year, as follows:

	1920	1919
Operating revenues (March 1—Dec. 31)	$35,112,377	.....
Operating expenses (March 1—Dec. 31)	31,567,085	.....
Net from railway operations	3,545,293	.....
Railway tax accruals	1,113,059	.....
Railway operating income	2,424,787	.....
U. S. Government—standard return	677,748	$4,107,432
U. S. Government—estimated guaranty, six months to Aug. 31, 1920	3,000,000	.....
Gross income	6,879,103	4,681,749
Interest on funded debt	1,729,870	1,578,180
Total deductions from gross income	3,927,188	2,790,868
Net income	2,951,915	1,890,881
Appropriated for investment in physical property	2,989,564	2,823,250
Income balance	Def. 37,649	Def. 932,369

The annual report of the Texas & Pacific will be reviewed editorially in an early issue.

WESTERN MARYLAND.—*Asks authority to Issue Bonds.*—Application has been filed with the Interstate Commerce Commission for authority to issue $1,527,000 of first and refunding mortgage 5 per cent bonds as collateral for a loan of $1,000,000, for which application has been made to the commission to enable the company to enlarge its elevator facilities at Port Covington, Baltimore.

Treasury Payments

The Treasury has announced the payment of $15,000,000 to the Great Northern and $500 to the Bonlee & Western as partial payments on account of the six months' guaranty and loans from the revolving fund to the following roads:

Charles City Western	$140,000
Great Northern	586,000
Main Central	400,000
Seaboard Air Line	375,000

Railroad Administration Settlements

The United States Railroad Administration reports the following final settlements, and has paid out to the several roads the following amounts:

Denver & Rio Grande	$800,000.00
El Paso & Southwestern	400,000.00
Macon Terminal	71,362.94
Fort Worth Union Passenger Station	4,529.13
Albany Passenger Terminal	5,679.12

The payment of these claims on final settlement is largely made up of balance of compensation due, but includes all other disputed items as between the railroad companies and the administration during the 26 months of federal control.

Dividends Declared

Fonda, Johnstown & Gloversville.—Preferred 1½ per cent quarterly, payable September 15 to holders of record September 10.

Mobile & Ohio.—Stock trust certificates, 2 per cent, payable October 1.

Chicago, St. Paul, Minneapolis & Omaha.—Preferred, 3½ per cent, semi-annually; common, 2½ per cent, semi-annually; both payable September 20 to holders of record September 12.

New York Central.—1¼ per cent, quarterly, payable October 1 to holders of record September 30.

St. Louis, Rocky Mountain & Pacific.—Common, 1 per cent, quarterly; preferred, 1¼ per cent, quarterly; both payable September 30 to holders of record September 19.

Cleveland, Cincinnati, Chicago & St. Louis.—Preferred, 1¼ per cent, quarterly, payable October 20 to holders of record September 30.

Lehigh Valley.—Common, 1¾ per cent, quarterly; preferred, 2½ per cent, quarterly; both payable October 1 to holders of record September 17.

St. Joseph, South Bend & Southern.—Common, 1 per cent, semi-annually; preferred, 2½ per cent, semi-annually; both payable September 15 to holders of record September 10.

Annual Report

Michigan Central Railroad Company—Seventy-fifth Annual Report

To the Stockholders of

THE MICHIGAN CENTRAL RAILROAD COMPANY

The Board of Directors herewith submits its report for the year ended December 31, 1920, with statements showing the income account for the year and the financial condition of the company.

The operation and maintenance of the company's road were continued under federal control until 12.01 o'clock a. m. of the first day of March, 1920, at which time the company resumed the operation of its railroad property. The Board of Directors at its meeting of March 10, 1920, authorized the acceptance on behalf of the company of the guaranty provisions of Section 209 of the Transportation Act, approved February 28, 1920, and such acceptance was filed with the Interstate Commerce Commission before March 15, 1920, as provided by the Act. The effect of this was that for the six months to September 1, 1920, the company was guaranteed a railway operating income not less than one-half the amount named in its contract with the Government as annual compensation.

The Interstate Commerce Commission by its order of July 29, 1920, granted an increase, effective August 26, 1920, in freight rates in eastern group territory of 40 per cent and of 33⅓ per cent between points in eastern group territory and other territories. It also granted an increase in passenger rates of 20 per cent, with a surcharge on Pullman fares of 50 per cent accruing to the carriers. These increases were not immediately allowed by several of the States as to intrastate rates, so that the full effect of the advance was not measured by the percentages for interstate traffic, although, in most instances, they were subsequently allowed under further orders of the Commission.

For the full year 1920 the freight and passenger revenues showed marked advances over the previous year. The return, however, was not as great as it would have been under normal business conditions, due to the fact that the greater part of the tonnage increase was carried at relatively low rates. The principal source of additional tonnage was in shipments of coal and ores and other products of mines, these constituting an increase of 3,665,000 tons, while the increase in total tonnage carried was 3,626,000 tons. There was a falling off in the shipments of grain, products of agriculture, live stock, fresh meats and packing house products, other products of animals, forest products and in unclassified merchandise in less than carload lots aggregating approximately 1,230,000 tons, while there were increases in manufactures and miscellaneous commodities of 1,190,000 tons.

The number of passengers carried during the year increased 510,219, this increase being almost entirely in local passengers. There were 8,314 more interline passengers than in 1919 and 89,175 fewer commutation passengers. This is reflected in the decrease of 2.85 miles in the average distance each passenger was carried. The advance in passenger rates, however, under order of the Interstate Commerce Commission, increased the average receipts per passenger per mile from 2.848 cents to 3.179 cents.

In the matter of payments for transportation of mail, which had been before the Interstate Commerce Commission for some time, an order was entered by the Commission in January, 1920, establishing increased rates from November 1, 1916, which, under the same order, were increased 25 per cent on January 1, 1918. Under this order the company received as additional compensation for the period November 1, 1916, to December 31, 1917, approximately $160,000, while the Railroad Administration received, as its share for the period of federal control, $485,000.

The substantial increases in pay and the changes in working conditions during and since federal control have created a situation which is giving the company grave concern. Besides the actual increase in wages granted by the Director General or ordered by the Labor Board there have been reclassifications of employees and special allowances which entail additional expense without compensating return in labor performed.

Under rule 60 of the Shop Crafts Agreement which provided that employees who are required to check in and out on their own time will be paid one hour extra at the close of each week, and under rule 3 in the same agreement which provided twenty minutes without loss of pay for lunch, this company incurs a substantial additional annual expense. The abolition of piece work in the shops of the company has also been the cause of heavy additional expense.

The condition of the company's equipment at the end of federal control has caused an unusual outlay for repairs, which are still under way.

There was a substantial increase in the cost of fuel.

Final settlement of accounts with the Railroad Administration for the period of federal control has not been effected, but the company is actively engaged in the preparation of the data necessary for use in connection with the making of such a settlement.

The settlement with the United States Government for the guaranty period—six months, March to August, 1920—in connection with the guaranty provision of the Transportation Act, is progressing.

The following is a comparative table of the mileage operated:

	1920 Miles	1919 Miles	Increase Miles
Main line and branches owned	1,186.80	1,182.97	3.83
Line jointly owned	.71	.71	...
Leased lines	578.35	578.35	...
Lines operated under trackage rights	100.03	100.03	...
Total road operated	1,865.89	1,862.06	3.83

The increase in mileage was on the Air Line Branch in connection with the construction of a cut-off from Air Line Junction to the east end of the new terminal yard at Niles.

Provision was made for financing the cost of 2,000 freight-train cars and 30 locomotives allotted to the company, during federal control, by the Director General of Railroads, all of which have been delivered, through an equipment trust (known as Equipment Trust No. 48) established by an equipment trust agreement dated January 15, 1920, providing for the payment of 75 per cent of the cost of the equipment in the company's 6 per cent equipment notes, dated January 15, 1920, maturing in equal annual installments over a period of 15 years, the balance, pursuant to an agreement, dated January 14, 1920, between the Director General and the company, to be deducted from the equipment depreciation and retirement credits arising in the company's favor under the standard contract with the Director General. The total cost of the equipment will amount to $7,025,283. The amount of notes issued is $5,118,000.

In addition to the equipment allocated to it by and acquired from the Director General of Railroads, the company is to receive from the New York Central Railroad Company, under sub-lease, 26 locomotives, 38 passenger-train cars and 1,950 freight-train cars covered by that company's equipment trust of 1920. The estimated cost of this equipment is $9,356,838.80 and the sub-lease provides that the sub-lessee shall assume its pro rata share of the equipment trust certificates, principal and interest, and expenses of the trust and shall pay that part of the cost of the sub-let equipment which is not financed through the trust, and that it shall, upon the fulfillment of the trust, become the owner of the equipment sub-let to it. Under this arrangement the company's share of the certificates issued, under the trust, representing approximately 75 per cent of the cost of the equipment, is $7,014,971.25. The remainder of the cost, approximately 25 per cent, was obtained from the New York Central Railroad Company as a loan, for which this company issued its fifteen 6 per cent notes, maturing in equal installments, December 23, 1921-35, aggregating $3,930,000.

On its ten-year 6 per cent promissory note dated December 23, 1920, given to the New York Central Railway Company, this company borrowed, for additions and betterments to way and structures, $613,000.

The changes in the funded debt of the company are shown in the following statement:

The funded debt outstanding on December 31, 1919, was		$57,793,931.13
It has been increased during the year as follows:		
M. C. R. R. Co. Equipment Trust of January 15, 1920, notes	$5,118,000.00	
M. C. R. R. Co. proportion of N. Y. C. R. R. Co. Equipment Trust of April 15, 1920, certificates	7,014,971.25	
15 promissory notes of the M. C. R. R. Co., dated December 23, 1920, given to the N. Y. C. R. R. Co., due serially at intervals of one year	3,930,000.00	
Ten-year promissory note of the M. C. R. R. Co., dated December 23, 1920, given to the N. Y. C. R. R. Co	613,000.00	16,675,971.25
		$74,469,902.38
It has been decreased during the year by payment of installments on account of equipment trusts as follows:		
N. Y. C. Lines Trust of 1907, due November 1, 1920	$260,425.45	
N. Y. C. Lines Trust of 1910, due January 1, 1921	393,960.44	
N. Y. C. Lines Trust of 1912, due January 1, 1921	151,710.90	
N. Y. C. Lines Trust of 1913, due January 1, 1921	262,359.54	
M. C. R. R. Trust of 1915, due October 1, 1920	300,000.00	
M. C. R. R. Trust of 1917, due March 1, 1920	600,000.00	1,968,456.33
leaving the funded debt outstanding on December 31, 1920		$72,501,446.05

There were nominally issued during the year and pledged as collateral in connection with the ten-year promissory note given to the New York Central Railroad Company for $613,000, this company's refunding and improvement mortgage 6 per cent bonds, series B, for a principal amount of $507,000.

In addition to the funded debt outstanding on December 31, 1920, the loans and bills payable appearing on the balance sheet are:

Director General of Railroads	$3,050,000
New York Central Railroad Co	5,000,000
Total	$8,050,000

The capital stock of the Detroit Toledo & Milwaukee Railroad Company is owned, one-half each, by the Michigan Central Railroad Company and the New York Central Railroad Company. The road of the Detroit, Toledo & Milwaukee Railroad Company originally extended from Dundee, Michigan, to Allegan, Michigan, a distance of 133.14 miles, and under an agreement dated January 1, 1905, provision was made for the operation of the section between Homer and Allegan by the Michigan Central Railroad Company and between Homer and Dundee by the Lake Shore & Michigan Southern Railway Company. In 1913, a section of this line between Allegan and Battle Creek, about 39 miles, was sold to a traction company, and the remaining mileage of the road was redivided for operation between the Michigan Central Railroad Company and the Lake Shore & Michigan Southern Railway Company so that the portion assigned to the Michigan Central Railroad Company was the line between Moscow and Battle Creek, a distance of 47.15 miles, and the portion assigned to the Lake Shore & Michigan Southern Railway Company was 46.98 miles between Dundee and Moscow. As the original agreement of January 1, 1905, had not been modified, the Michigan Central Railroad Company and the New York Central Railroad Company executed during the year 1920 an agreement with the Detroit Toledo & Milwaukee Railroad Company, effective September 1, 1913, for the operation of the road based on the new division of mileage.

The old draw-bridge across the River Rouge was found to be of insufficient strength and capacity to carry the heavy freight and passenger trains of the Michigan Central Railroad (Toledo Division) and the New York Central Railroad (Detroit Branch) and has been replaced by a double-track Strauss bascule lift bridge of 145-foot span.

Expenditures during the year for improvements on property were as follows:

Improvements on owned property used in operation		$1,584,897.52
Equipment purchased and acquired less equipment retired		3,968,898.16
Improvements on leased property		155,611.03
		$5,709,406.71
Improvements on miscellaneous physical property	$42,269.20	
Less sale of Detroit lands, etc	88,346.32	
A net credit of		46,077.12
The net increase in property investment during the year 1920 was		$5,663,329.59

In the operation of the Pension Department 53 employees were retired and placed upon the pension rolls. Of these retirements, 36 were authorized because of the attainment of seventy years of age, and 17 because of permanent physical disability. The number of pensioners who died during 1920 was 38. The number of retired employees upon the pension rolls at the close of the year was 374. The average monthly pension allowance of these is $27.30. The total amount paid in pensions during the year was $126,901.21.

SUMMARY OF FINANCIAL OPERATIONS AFFECTING INCOME

	Year ended Dec. 31, 1920	Year ended Dec. 31, 1919	Increase
Compensation accrued for the possession, use and control of the property of this company and its leased lines, as stated in contract with the Director General of Railroads—January 1 to February 29, inclusive	$1,342,021.26		
Additional compensation accrued account completed additions and betterments—January 1 to February 29, inclusive	91,062.93		
Guaranteed net railway operating income under section 209 of Transportation Act of 1920—March 1 to August 31, inclusive .....$4,318,626.16 *Less* operating income items audited March 1 to August 31, inclusive, applicable to the period prior to January 1, 1918 .....$155,770.78	4,162,855.38		
Net railway operating income—corporate account—September 1 to December 31, inclusive	4,912,730.18		
TOTAL (compared with compensation accrued in 1919 under contract with Director General of Railroads)	$10,508,669.75	$8,699,812.56	$1,808,857.19
MISCELLANEOUS OPERATIONS			
Revenues	$139,827.63		$139,827.63
Expenses	82,338.15		82,338.15
NET INCOME	$57,489.48		$57,489.48
OTHER INCOME			
Income from lease of road	$151.25	$3,380.34	—$3,229.09
Miscellaneous rent income	5,845.61	14,161.59	— 8,315.98
Miscellaneous non-operating physical property	5,095.85	5,341.01	— 245.16
Dividend income	498,305.04	497,218.28	1,086.76
Income from funded securities	54,064.68	54,937.86	— 873.18
Income from unfunded securities and accounts	563,495.98	279,355.10	284,140.88
Miscellaneous income	2,875.05	3,793.00	— 917.95
TOTAL OTHER INCOME	$1,129,833.46	$858,187.18	$271,646.28
GROSS INCOME	$11,695,992.69	$9,557,999.74	$2,137,992.95
DEDUCTIONS FROM GROSS INCOME			
Rent for leased roads	$2,774,791.59	$2,783,598.46	—$8,806.87
Miscellaneous rents	4,119.35	8,113.86	— 3,994.51
Miscellaneous tax accruals	6,734.49	7,421.76	— 687.27
Separately operated properties—loss	132,438.11	57,577.60	74,860.51
Interest on funded debt	3,059,383.17	2,389,972.30	669,410.87
Interest on unfunded debt	1,668,605.49	1,615,304.29	53,301.20
Amortization of discount on funded debt	59,068.79	30,934.77	28,134.02
Maintenance of investment organization	1,317.50	2,344.54	— 1,027.04
War taxes	92,000.00	719.59	91,280.41
Miscellaneous income charges	8,971.22	19,880.39	— 10,909.17
Corporate general expenses	29,069.27	146,699.41	—117,630.14
TOTAL DEDUCTIONS FROM GROSS INCOME	$7,836,498.98	$7,062,566.97	$773,932.01
	$3,859,493.71	$2,495,432.77	$1,364,060.94
Less revenues and expenses applicable to the period prior to January 1, 1918, settled for account of the corporation by the United States Railroad Administration	53,708.47	2,428,203.27	—2,374,494.80
NET CORPORATE INCOME	$3,805,785.24	$67,229.50	$3,738,555.74
DISPOSITION OF NET INCOME			
Dividends declared (4 per cent each year)	$749,456.00	*	$749,456.00
SURPLUS FOR THE YEAR CARRIED TO PROFIT AND LOSS	$3,056,329.24	$67,229.50	$2,989,099.74

*Dividends in 1919, aggregating 4 per cent, charged to accumulated surplus.

BALANCE OF CREDIT OF PROFIT AND LOSS (FREE SURPLUS) ON DECEMBER 31, 1919		$17,512,018.33
ADDITIONS:		
Surplus for the year 1920	$3,056,329.24	
Profit on road and equipment sold	234,114.37	
Profit realized on sale of so-called Detroit Lands	197,843.12	
Unrefundable overcharges	9,839.77	
Road property retired by United States Government and not replaced, originally charged to operating expenses	17,198.87	3,515,325.37
		$21,027,343.70
DEDUCTIONS:		
Depreciation prior to July 1, 1907, on equipment retired during 1920	$151,533.99	
Road property abandoned	35,721.26	
Various adjustments of accounts (net)	8,111.83	195,367.08
BALANCE TO CREDIT OF PROFIT AND LOSS, DECEMBER 31, 1920		$20,831,976.62

In order to preserve continuity of comparisons, operating revenues, operating expenses and other statistics have been separately shown in detail elsewhere in this report for the full calendar year 1920 regardless of federal control, guaranty period or corporate operation.

The income to the corporation, arrived at by the addition of compensation received under federal control, the guaranteed net railway operating income under Section 209 of the Transportation Act of 1920, and the net railway operating income for the four months September to December, 1920, inclusive, was more by $1,808,857.19 than that received as compensation from the United States Government during the federal control year 1919.

During 1920 the results of operation of the stockyards at East Buffalo were included in miscellaneous operations while in 1919 they were included in the operating revenue and expense accounts. This is the cause of the increase shown in miscellaneous operations.

The increase of $284,140.88 in the income from unfunded securities and accounts is largely due to interest received from temporary investment, in United States Treasury Certificates and other securities, of cash from the sale of equipment trust certificates of April 15, 1920 until such time as the funds were required to pay for new equipment.

Largely contributing to the increase of $74,860.51 in charges for loss in connection with separately operated properties is this company's proportion of an increased deficit from operation of the Indiana Harbor Belt Railroad.

The increase of $669,410.87 in interest on funded debt is due to the increase of such debt as noted elsewhere in this report, while the increase of $53,301.20 in interest on unfunded debt is mainly in connection with United States Government accounts.

The increase of $91,280.41 in war taxes is due to the accrual of the company's proportion of federal income tax on the taxable income of the company for the eight months of 1920 ending August 31. This tax for the last four months of the year was included in railway tax accruals. The net income of the company was not taxable in the year 1919.

The corporate general expenses shown for 1920 represent only those for the months of January and February, during which the property was under federal control, expenditures of this character for the remainder of the year being included in operating expenses. This accounts for the decrease of $117,630.14, as shown.

Appreciative acknowledgment is made to all officers and employees of their loyal and efficient cooperation and service.

For the Board of Directors,
ALFRED H. SMITH, President.

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Railway Officers

Executive

J. G. Torian, supervisor of wages of Morgan's Louisiana & Texas, has been appointed assistant to the vice-president and general manager with headquarters at Houston, Texas. Mr. Torian will continue in the same duties as heretofore and the position of supervisor of wages has been abolished.

Financial, Legal and Accounting

G. A. Godfrey, assistant auditor of revenues of the Grand Trunk, Canadian lines, with headquarters at Montreal, has been appointed acting auditor of revenues of the Grand Trunk, Western lines, with headquarters at Detroit, Mich.

J. E. Murphy has been appointed auditor of equipment service accounts of the New York, New Haven & Hartford with headquarters at New Haven, Conn., with jurisdiction over all car accounting and M. C. B. matters, succeeding G. H. Staehle, car accountant, deceased.

Operating

Harry T. Kinney, trainmaster of the Susquehanna and Tioga divisions of the Erie, with office at Elmira, N. Y., has been appointed superintendent of the Wyoming division and of the Wilkes-Barre & Eastern Railroad, with headquarters at Dunmore, Pa., succeeding A. D. Parsons, resigned. **Paul W. Johnson** succeeds Mr. Kinney as trainmaster of the Susquehanna and Tioga divisions.

C. W. Coe, whose appointment as assistant general manager of the Wheeling & Lake Erie, with headquarters at Cleveland, Ohio, was announced in the *Railway Age* of September 3 (page 471), was born at Norwalk, Ohio, August 6, 1867. He entered railroad service in June, 1887, as a fireman for the Wheeling & Lake Erie. He was promoted to locomotive engineer in April, 1891, which position he held until February 1903, when he was advanced to road foreman of engines. In September, 1904, he was promoted to trainmaster, and one year later to assistant superintendent, serving in that position until 1906, when he was appointed superintendent of the Toledo division, being transferred later to the Toledo and the Cleveland divisions. In April, 1919, he was promoted to general superintendent of the Wheeling & Lake Erie, which position he held until August 15, 1921, when his recent promotion to assistant general manager became effective.

Ernesto O. Y. Llano, whose promotion to general manager of the National Railways of Mexico, with headquarters at Mexico City, was announced in the *Railway Age* of August 13 (page 316), was born at Ahualulco, Mexico, on October 28, 1880. He entered railway service in June, 1898, with the Mexican Central which company he served as operator and station agent until 1900, when he entered the employment of the Chihuahua & Pacific as an operator and station agent. From 1902 to 1905 he held the positions of chief dispatcher, and chief clerk to the superintendent of the Chihuahua & Pacific. In November, 1905, he entered the service of the Nacozari Railroad at Nacozari, Sonora, as chief dispatcher and in 1907 was promoted to train master and acting superintendent. He remained as acting superintendent until August, 1912, when he was promoted to general superintendent in which position he was serving at the time of his recent appointment.

Traffic

W. H. Cobb has been appointed commercial agent of the Atlantic Coast Line, with headquarters at Fayetteville, N. C., and **H. H. Elliott** has been appointed commercial agent, with headquarters at Wilmington, N. C.

W. J. Murray has been appointed commercial agent of the Erie with headquarters at New Haven, Conn., effective September 1.

C. A. Swope has been appointed general eastern freight agent of the Louisville & Nashville, with headquarters at New York, effective September 1.

R. D. McGrath has been appointed commercial agent of the Louisiana & Arkansas, with headquarters at Kansas City, Mo., succeeding L. W. Gent, resigned.

B. Levy has been appointed assistant general freight agent of the Atchison, Topeka & Santa Fe, with headquarters at San Francisco, Cal., effective September 1.

G. B. Bush, formerly general traffic manager of the Raleigh Coal & Coke Company, Cincinnati, O., has been appointed coal service agent of the Chesapeake & Ohio.

T. S. Davant, Jr., has been appointed soliciting freight agent of the Winston-Salem Southbound, with headquarters at Winston-Salem, N. C., effective September 1.

S. H. Cummings, coal service agent, has been promoted to assistant coal freight agent, in charge of west-bound coal and coke traffic, with headquarters at Cincinnati, Ohio.

E. L. Blanford, traveling freight agent of the Louisville & Nashville, with headquarters at Pittsburgh, has been promoted to commercial agent of the same road, with headquarters at New York, effective September 1.

O. E. Lowry has been appointed assistant general freight agent of the Chesapeake & Ohio, in charge of the tariff bureau, with headquarters at Richmond, Va., succeeding **H. S. Smith,** who has been appointed coal freight agent in charge of all coal and coke traffic, with headquarters at Richmond.

C. D. Thomas has been appointed assistant general freight agent of the Southern with headquarters at Cincinnati, Ohio, effective September 1. **F. E. Godfrey,** assistant general freight agent, will henceforth perform the duties hitherto assigned to **C. H. Pearson,** assistant general freight agent, who has been appointed a member of the Southern Freight Rate Committee.

Frank P. Barr, whose appointment as general traffic manager of the Wheeling & Lake Erie was announced in the *Railway Age* of September 3 (page 471), was born on April 5, 1878, at Canton, Ohio, and was educated in the public schools of that city. He entered railroad service on July 1, 1895, as a clerk in the car record office of the Cleveland, Canton & Southern, which road was absorbed four years later by the Wheeling & Lake Erie. Mr. Barr was appointed chief clerk in the car record office of the Wheeling & Lake Erie in February, 1906, and was promoted to car accountant in May, 1907. He was next promoted to superintendent of car service in July, 1908, in which position he served for four years, when on May 1, 1912, he was promoted to superintendent of transportation. In February, 1918, he was appointed assistant to the general manager, and he served as assistant to the federal manager during federal control. On March 1, 1920, he was appointed assistant general manager, which position he held until the time of his recent promotion.

E. L. Hukill, traveling representative of the assistant general manager of the New York Central, has been appointed traffic manager of the Cleveland, Southwestern & Columbus, with headquarters at Cleveland, Ohio. Mr. Hukill was born at Newark, Ohio, on August 8, 1889, and entered railroad service in March, 1906, as a yard clerk on the Baltimore & Ohio at Sandusky, Ohio. In August, 1907, he was employed by the Lake Shore & Michigan Southern in the accounting department at Chicago, and in November of the following year he returned to Sandusky as a clerk in the local freight office. He was promoted to chief clerk to the terminal yard master at Toledo, Ohio in June, 1913, and in September, 1914, he was appointed soliciting freight agent of the New York Central with the same headquarters. From September, 1918, to March, 1921, he served as traveling representative of the general superintendent. On the latter date he was appointed traveling representative of the assistant general manager and

was serving in this position at the time of his recent appointment.

Mechanical

S. T. Depue has been appointed master mechanic of the Kent division of the Erie, succeeding R. V. Bloeker, resigned. Mr. Depue has been succeeded as shop superintendent at Galion, O., by **H. W. Sasser.**

B. A. Orland has been appointed master mechanic of the Mobile & Ohio with headquarters at Murphysboro, Ill., effective September 1. Mr. Orland's jurisdiction will extend from East St. Louis, Ill., to Tamms, Ill.

J. C. Nolan, superintendent of the Texas division of the Gulf Coast Lines with headquarters at Kingsville, Tex., has been appointed mechanical superintendent with the same headquarters, succeeding J. L. Lavallee, resigned. **J. E. Callahan,** superintendent of the Louisiana division with headquarters at De Quincy, La., has succeeded Mr. Nolan as superintendent of the Texas division and **G. C. Kennedy** has succeeded Mr. Callahan as superintendent of the Louisiana division.

Engineering, Maintenance of Way and Signaling

W. C. Kelly, electrical foreman on the St. Louis division of the Illinois Central, with headquarters at Centralia, Ill., has resigned to become assistant electrical engineer of the Central of Georgia, with headquarters at Macon, Ga.

E. I. Rogers, whose appointment as chief engineer of the Peoria & Pekin Union, with headquarters at Peoria, Ill., was announced in the *Railway Age* of August 20 (page 390), was born at St. Joseph, Mo., on August 3, 1876, and entered railway service as a track apprentice on the Illinois Central in 1897. From January, 1898, to June, 1903, he served as an instrumentman on the Tennessee division of the Illinois Central, and on the latter date was promoted to assistant engineer, with headquarters at Memphis, Tenn. He served in this position until October, 1911, when he was promoted to roadmaster, with headquarters at Vicksburg, Miss. A year later, Mr. Rogers left the service of the Illinois Central to become chief engineer of the Muskogee, Oklahoma & Gulf, with headquarters at Muskogee, Okla., and later became associated with the Lorimer & Gallaher Construction Company. From August, 1914, to February, 1916, he served as chief engineer of the Texas City Transit Company, and in July of that year he returned to the Illinois Central as an engineer in the valuation department. He was appointed assistant roadmaster, with headquarters at Fort Dodge, Ia., later in the same month, and in October, 1916, he was promoted to roadmaster, with the same headquarters. He was serving in this position at the time of his recent appointment.

E. I. Rogers

E. J. Bayer, whose appointment as engineer maintenance of way of the Evansville, Indianapolis & Terre Haute, with headquarters at Washington, Ind., was announced in the *Railway Age* of August 13 (page 317), was born at Cincinnati, Ohio, on April 1, 1888. He was educated at Purdue University and entered railroad service on July 5, 1910, with the Cleveland, Cincinnati, Chicago & St. Louis at Mt. Carmel, Ill. His entire railroad career has been spent in the service of this company. From 1911 to 1914 he served as an assistant in the engineering corps at Indianapolis, Ind., Mattoon, Ill., and Galion, Ohio. He was promoted to assistant engineer maintenance of way with headquarters at Indianapolis on October 15, 1914, and also served in that position at Wabash, Ind., and Galion, Ohio, until June 24, 1918. On the latter date he was appointed acting engineer maintenance of way of the Cairo division, with headquarters at Mt. Carmel, Ill. He was transferred to Galion as assistant engineer maintenance of way of the Cleveland-Indianapolis division on August 1, 1919, and was serving in that position at the time of his recent appointment.

J. W. Williams, whose appointment as chief engineer of the Western Pacific, with headquarters at San Francisco, Cal., was announced in the *Railway Age* of August 27 (page 430), was born at Milan, Ohio, in 1879. He entered railroad service in 1897 as a stakeman on an engineering corps of the Albuquerque Eastern, on location surveys in New Mexico. He was employed by this company on location and construction work until April, 1903, when he entered the employ of the Atchison, Topeka & Santa Fe as a transitman on location surveys. He was later promoted to assistant engineer in charge of location surveys and construction in Northern California, where he remained until 1906, when he was appointed acting chief engineer of the San Francisco & Northwestern, with headquarters at San Francisco, Cal. In 1907, when the Northwestern Pacific was formed, Mr. Williams was appointed assistant chief engineer, having charge of field work on the construction of a line through the Eel river canyon, which position he held until July, 1914, when he was promoted to chief engineer of construction of the Northwestern Pacific to succeed W. D. Edes. During the war he served as major of the first battalion, Eighteenth Engineers, and was in France for nearly two years, later being commissioned lieutenant colonel. Upon discharge from military service in July, 1919, he re-entered the service of the Northwestern Pacific, as chief engineer in charge of construction and maintenance and held this position until August 15, 1921, when he was appointed chief engineer of the Western Pacific.

J. W. Williams

Purchasing and Stores

J. M. Velasco, assistant general purchasing agent of the National Railways of Mexico, with headquarters at New York, has been appointed purchasing agent with headquarters at Mexico City. **W. L. Wibel** succeeds Mr. Velasco at New York.

Obituary

George L. Connor, formerly passenger traffic manager of the New York, New Haven & Hartford, died at New Haven, Conn., on September 3. Mr. Connor was born on August 23, 1846, in Brooklyn, N. Y. He entered traffic work in 1868 as a clerk in the treasurer's office of the Narragansett Steamship Company and served in various positions in the traffic department of steamship companies until 1893, when he resigned as general passenger agent of the Old Colony Steamboat Company and the Old Colony Railroad (now a part of the New Haven) to become passenger traffic manager of the New York, New Haven & Hartford, in which position he served until the time of his retirement in 1908.